

AFTER



Access ID No. 18025

US-NAUM0175124

US-NAUM0175124-00001





Access ID No. 18025

US-NAUM0175125

US-NAUM0175124-00002





Access ID No. 18025

US-NAUM0175126  
US-NAUM0175124-00003





Access ID No. 18025

US-NAUM0175127  
US-NAUM0175124-00004



**Newmont Mining Corporation**

# Fax

<b>To:</b> Karen Garcia	<b>From:</b> Joe Pollara
<b>Fax:</b> 505-827-7195	<b>Pages:</b> 6
<b>Phone:</b>	<b>Date:</b> 12/04/00
<b>Re:</b> Poison Canyon Stabilization	<b>CC:</b>

☐ **Urgent**    ☒ **For Review**    ☐ **Please Comment**    ☐ **Please Reply**    ☐ **Please Recycle**

Karen:

Please take a look at this design for stabilizing the erosion feature at the Poison Canyon mine site and let me know if you have any comments. I will try to complete this work the last week of December.

Joe



**SHEPHERD MILLER, INC.**  
*Environmental and Engineering Consultants*

**MEMORANDUM**

**DATE:** 9-Nov-00 **SMI #** 100735

**TO:** Joe Pollara, NGC (303) 837-5154

**FROM:** Phil Leonhardt

**SUBJECT:** Poison Canyon Head Cut (p:\100735\joepollara.doc)

**COPY:** Toby Wright

Joe, this memo summarizes an approach to stabilizing a headcut in the Poison Canyon area near grants N.M. Given information is as follows:

design storm is the 100 year-24 hr = 2.8 in  
 drainage area is 160 acres  
 main stem length is 3000 ft  
 slope - 5%

Requested information included a riprap and filter fabric specification for a trapezoidal channel design. Hand-drawn sketches of the design were also requested.

Based on the photos supplied, I assumed that the gully is about four feet deep, 8 to 10 feet wide at the base and 100 feet long.

**Hydrology**

I calculated a 100yr-1 hr rainfall of 1.8 inches/hour using guidelines in the NOAA Atlas for New Mexico. Using the rational formula  $Q=Cia$ , where  $C=0.82$ ,  $i=1.8$  in/hr, and  $a=160$  acres;  
 $Q_{peak} = 236$  cfs.

**Hydraulics**

Our recommended approach to stabilize the headcut is to flatten the slopes in the area of the head of the gully and cover the regraded area with riprap. This would stabilize the headcut but not change the gully downstream of the end of the trapezoidal channel. I don't believe this presents any stability issues but may not be desirable from an aesthetic standpoint. The sideslopes of the gully will erode to some semi-stable slope with time.

Channel design was done using Flowmaster software. Assuming a trapezoidal channel with a 6-foot bottom width, the flow depth would be 2.17 feet and the flow velocity would be 10.53 fps. Riprap sizing calculations followed FHA procedures presented in Hahn and Barfield (1994).

P:\100735\joepollara.doc

3801 Automation Way, Suite 100, Fort Collins, Colorado 80525  
 Telephone (970) 223-9600 / FAX (970) 223-7171

1-237 P.002/006 F-679

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FROM 03:28PM DEC-04-00



### Specifications, Quantities and Construction

Sketches and calculations are attached to this memo. A brief summary of the design and specifications is provided below:

1. Regrade the nick point area to 4:1 and cover with a heavy-duty non-woven geotextile (minimum weight of 8oz. per square yard). Over the geotextile place a 2-foot thick layer of riprap ( $D_{50}$  = 12 inches,  $D_{100}$  = 18 inches,  $D_{30}$  = 8 inches). The riprap shall be a hard, durable stone and have a specific gravity greater than 2.5. Thicken the upstream edge of the riprap to 3 feet as shown on section D - D'.
2. Transition into a riprap-lined (same spec as above) trapezoidal channel with 2:1 sideslopes, a bottom width about equal to the width of the existing gully, and 3 feet deep, then
3. End the channel after about 10 feet with a thickened edge as shown on section C - C'.

A medium-sized hydraulic excavator is the ideal equipment for the required regrading and rock placement. The rock reinforcement should not be placed on fill since it is unlikely that the contractor would have equipment available to adequately compact any fill. Filter fabric should be overlapped at least 6 inches and shingled (upstream piece over downstream piece). At the upstream edge of the 4:1 area, the filter fabric should be well anchored at the bottom of the trench for the thickened edge. Also at the upstream edge, the shape of the reinforced area may need to be modified to fit field conditions and ensure that all flow in the gully enters the riprapped area.

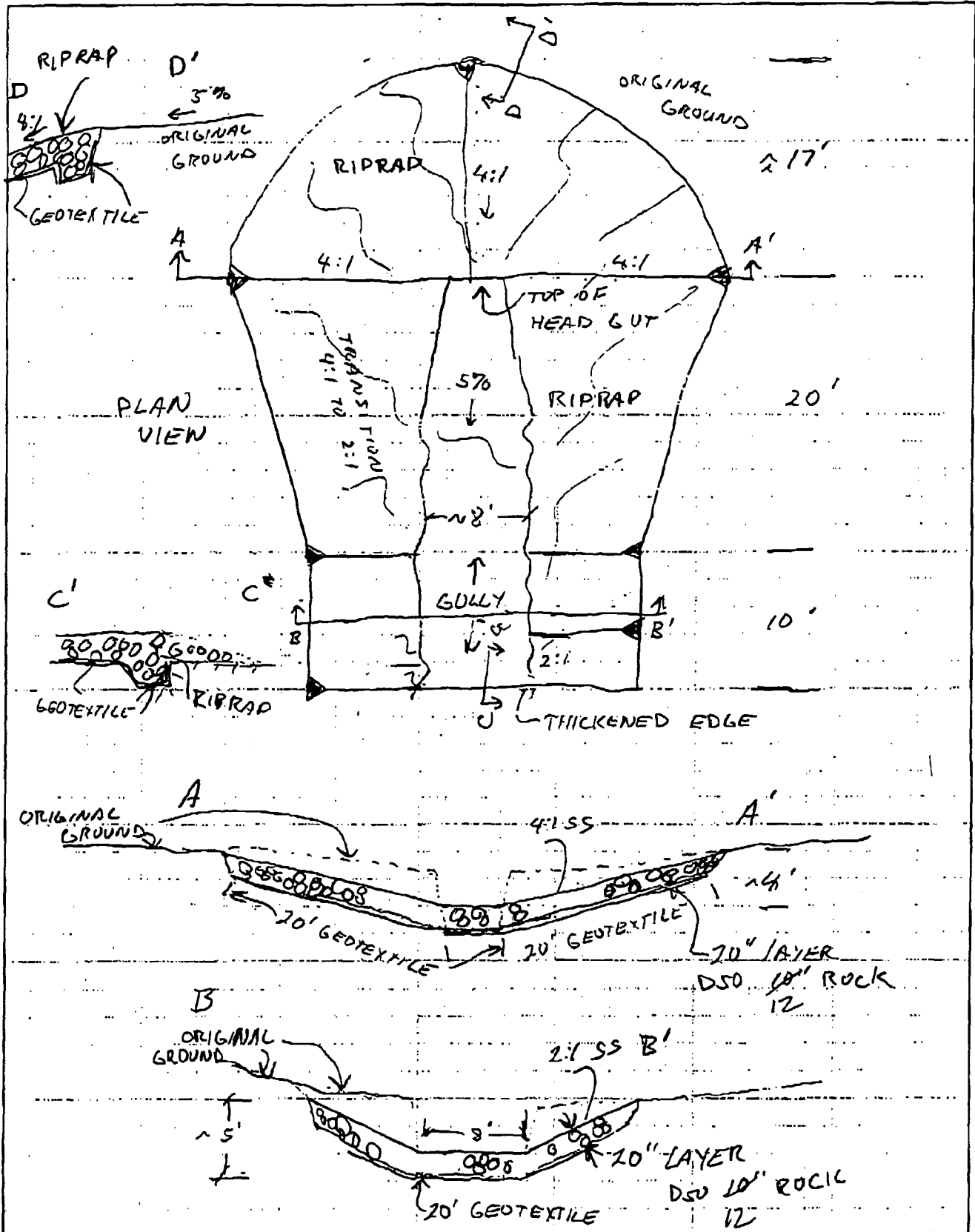
Approximately 50 cy of soil will need excavating. Approximately 80 cy of riprap and 1200 sq.ft of filter fabric is needed.





**SHEPHERDMILLER**  
INCORPORATED

CLIENT NEWMONT JOB NO. 100735 PAGE        OF         
PROJECT POISON CANYON DATE 11/8/00 DATE CHECKED         
DETAIL        COMPUTED BY PZY CHECKED BY       





CLIENT NGC JOB NO. \_\_\_\_\_ PAGE \_\_\_\_\_ OF \_\_\_\_\_  
 PROJECT POISON CANYON DATE 11/9/00 DATE CHECKED \_\_\_\_\_  
 DETAIL \_\_\_\_\_ COMPUTED BY PZ CHECKED BY \_\_\_\_\_

$$d_{max} = 5 \frac{D_{50}}{8S}$$

$$\gamma = 62.4 \quad S = 0.05$$

$$d_{max} = 1.6 D_{50}$$

$$V = \frac{1.486}{n} R^{2/3} S^{1/2} \quad R = \text{hydraulic radius}$$

$$V = \frac{37.7}{D_{50}^{1/6}} R^{2/3} S^{1/2} \quad \text{Manning eqn w/ } n = 0.0395 D_{50}^{1/6}$$

assume  $R = d_{max}$

$$V = \frac{37.7}{D_{50}^{1/6}} (1.6 D_{50})^{2/3} (0.05)^{1/2}$$

$$V = 11.5 D_{50}^{1/2}$$

$$Q = VA$$

$$236 = 11.5 D_{50}^{1/2} \cdot 22.4 \quad A = 22.4 \text{ ft}^2$$

$$D_{50} = 0.88 \text{ ft} = 10.6 \text{ in. say } 12"$$

$$\text{check } n = 0.0395 D_{50}^{1/6}$$

$$n = 0.639 - \text{assumed } 0.04 \text{ O.K.}$$

$$D_{100} = 1.5 D_{50} = 18"$$

$$D_{30} = 0.66 D_{50} = 8"$$

$$\text{Quonities } 4' \text{ area} = \pi \frac{18^2}{4} \times \frac{1}{2} = 127 \text{ ft}^2$$

$$\text{transition } 20 \times 31 = 620 \text{ ft}^2$$

$$\text{Channel } 10 \times 25 = \frac{250}{997 \text{ ft}^2 \times 2' \text{ thick} \times \frac{1}{2.7}} = 74 \text{ cy}$$

$$\text{THICKEND} = (1' \times 3' \times 40') = 120' = 4.5 \text{ cy}$$

$$1200 \text{ sf} - \text{Filter FABRIC} \quad \text{RIRRAP } 80 \text{ cy}$$



# Trapezoidal Channel Analysis & Design

## Open Channel - Uniform flow

Worksheet Name: Poison Canyon

Comment:

Solve For Depth

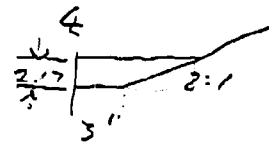
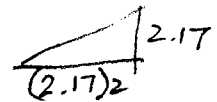
Given Input Data:

Bottom Width.....	6.00 ft
Left Side Slope..	2.00:1 (H:V)
Right Side Slope..	2.00:1 (H:V)
Manning's n.....	0.040
Channel Slope....	0.0500 ft/ft
Discharge.....	236.00 cfs

Computed Results:

Depth.....	2.17 ft
Velocity.....	10.53 fps
Flow Area.....	22.41 sf
Flow Top Width...	14.67 ft
Wetted Perimeter..	15.70 ft
Critical Depth...	2.70 ft
Critical Slope...	0.0210 ft/ft
Froude Number....	1.50 (flow is Supercritical)

$$A = 2.17 \times 6 + 2.17^2 \times 2 = 22.4$$



$$\text{hydraulic radius} = \frac{22.4}{4.85(2) + 6} = 1.43$$

Open Channel Flow Module, Version 3.21 (c) 1990  
Haestad Methods, Inc. \* 37 Brookside Rd \* Waterbury, Ct 06708



# NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

**GARY E. JOHNSON**

Governor

**Jennifer A. Salisbury**

Cabinet Secretary

**Douglas M. Bland**

Director

**Mining and Minerals Division**

September 8, 2000

David Baker  
Vice President  
Environmental Affairs  
1700 Lincoln St.  
Denver, Co. 80203

**Re: Release of the Poison Canyon Mine from the New Mexico Mining Act**

Dear Mr. Baker,

On May 30, 1996 Santa Fe Pacific Gold Corporation applied for a variance requesting an extension of time to allow the Poison Canyon Mine site's re-vegetation to become established. The Mining and Minerals Division (MMD) granted the variance on June 24, 1996 for a period of 5 years. Newmont Mining Company, current owner of the mine, contacted MMD earlier this summer to request an inspection for release of the site. MMD staff conducted an inspection at the reclaimed mine site on August 16, 2000.

In accordance with the NMMA § 69-36-7U, and § 510 of the NMMA Rules, the Mining and Minerals Division has made a decision regarding release of the Poison Canyon Mine from further requirements of the NMMA.

In order for a site to be released from further requirements of the NMMA under prior reclamation, the standards set in the NMMA Rules § 510.B must be met. The Rule states, "The director shall release the owner or operator from further requirements of the Act and of this Part if, after an inspection of the reclaimed areas, he determines that the reclamation measures satisfy the requirements of the Act and the substantive requirements for reclamation pursuant to this Part." The substantive requirements for reclamation in Part 5 of the Rules in part can be found in § 506.J.3. which states, "the work to be done will reclaim disturbed areas within the permit area to a condition that allows for re-establishment of a self sustaining ecosystem on the permit area following closure, appropriate for the life zone of the surrounding area..."

Inspections, including vegetative sampling were conducted in September 1995 and recently on August 16, 2000. It was noted during the 1995 inspection that the Poison

Mining and Minerals Division \* 2040 S. Pacheco Street \* Santa Fe, New Mexico 87505

\* Phone: (505) 827-5970 \* Fax (505) 827-7195 \* <http://www.emnrd.state.nm.us>



Canyon Mine reclamation showed significant signs of invasion by undesirable weedy species of plants and lack of plant diversity. Therefore, the site was not released at that time. During the August 2000 inspection, MMD staff reported that native perennial grass, shrub and forb species have successfully established dominance of the site. Please refer to the attached 1995 and August 2000 inspection reports.

The well established four-wing saltbush (*Atriplex spp.*) western wheatgrass (*Agropyron Smithii*)/ blue grama (*Bouteloua gracilis*) community now inhabiting the site make up the majority of the vegetative cover. This is consistent with the natural vegetation composition in the surrounding undisturbed areas adjacent to the mine site. Though there is a small pocket of sunflower (*Heliantus spp.*), an undesirable annual forb, persisting in the pit bottom, indications are that the sunflower population has been receding and will continue to do so as it is replaced by more permanent perennial species.

The results of the recent August vegetative survey conducted by MMD staff show that the agreed upon vegetative standard of 75% of the Range Site Description (RSD) was met. Please refer to the attached August 2000 Inspection Report for details. The standard included a 13.5% average canopy cover (75%RSD) and a diversity index equal to the RSD. The site contains an average of 34% cover, well over the minimum standard.

While the vegetative requirements have been met, MMD also must consider all aspects including substantive requirements as stated above, when determining eligibility for release. This includes overall stability of the site demonstrated by the lack of erosion features. During the August inspection, MMD staff noted a particularly severe erosion gully which appears to be actively growing and has potential to compromise the reclamation at the mine site.

In order for MMD to determine that the site is releasable in accordance with the NMMA, we must determine that the site has met the substantive requirements pursuant to Subpart 5. Reclamation measures must include, as defined by 107.HH of the Mining Act Rules, stabilization of a permit area following closure. The presence of a 4 ft erosion gully capable of negatively impacting reclamation at the site prevents us from making that determination at this time.

Therefore, MMD requests that Newmont Mining Company take steps to control further erosion in the above mentioned gully. In discussions with Newmont Mining Co. personnel regarding this issue, it appears that mitigation of the gully erosion is possible without creating a larger disturbance. Once this has been accomplished and MMD staff have inspected the site, it may then be appropriate to immediately release the site from further requirements of the NMMA. Please notify our office at least one week prior to estimated completion of work at the site so that MMD staff can have an opportunity to inspect the adequacy of the erosion control measures taken. At that time MMD will re-evaluate appropriateness of release of the site. We are available to discuss some possible erosion control measures that could be implemented that would satisfy Mining Act requirements.

Poison Canyon  
September 8, 2000

Please respond to this request by October 7, 2000. If the site has not been released by June 24, 2001, Newmont Mining Company may be required to permit the mine site in accordance with Subpart 5 of the NMMA.

Please feel free to call Karen Garcia at (505) 827-5982 or me at (505) 827-5974 if you have questions or wish to discuss the terms of release of the Poison Canyon Mine.

Sincerely,



Douglas M. Bland  
Division Director

cc: ✓ Karen W. Garcia, Permit Lead  
Fernando R. Martinez, Program Manager  
Kerrie E. Neet, Bureau Chief, Mine Regulatory Bureau



**PRIOR RECLAMATION INSPECTION REPORT  
AND  
RECOMMENDATION FOR RELEASE OR PERMIT  
REQUIREMENT**

**Santa Fe Pacific Gold Corporation**

**Submitted in Partial Fulfillment of New Mexico Mining Act  
Section 69-36-7 U., Prior Reclamation**

**New Mexico Energy, Minerals and Natural Resources Department  
Mining and Minerals Division  
Mining Act Reclamation Bureau**

**September 29, 1995**

## **Introduction**

The purpose of this study was to determine if reclamation measures at 11 mines, for which Santa Fe Pacific Gold Corporation requested prior reclamation inspections, satisfy the requirements of the New Mexico Mining Act and substantive requirements for reclamation pursuant to the New Mexico Mining Act Rules. The sites are tabulated in Table I. Figures 1 and 2 are maps showing the locations of the mine sites.

Santa Fe Pacific Gold Corporation (Santa Fe) is the owner of the mineral rights at all the mine sites mentioned above, with the possible exception of the mine on Section 17 T13N R9W. Santa Fe Pacific Gold was not the operator any of the sites, but has reclaimed the sites (Santa Fe, 1994) to remove any further liabilities relative to the New Mexico Mining Act. Santa Fe is not the surface owner of any of the sites. This has hindered reclamation activities because Santa Fe cannot restrict grazing by surface owners on reclaimed areas. The known surface owners are listed in Table I.



## Inspection Procedures

On August 31, 1995 Santa Fe Pacific Gold escorted MMD personnel on a quick inspection of 8 of 11 sites for which Santa Fe submitted prior reclamation inspection requests. Ms. Denise Gallegos, Manager-Environmental Compliance and Audits, Mr. Paul Eby, Director-Field Operations, Mr. Lee Simpkins and Mr. Larry Taylor, Contractor, represented Santa Fe Pacific Gold Corporation. Mr. Robert Young, Environmental Engineer and Robyn Tierney, Reclamation Specialist represented the New Mexico Mining and Minerals Division. On September 12 Mr. Robert Young and Mr. Fernando Martinez, Reclamation Specialist revisited six of the above sites to take additional measurements. The site on Section 1 T13W R9W was inspected on September 13 by Mr. Robert Young and Mr. Fernando Martinez, Reclamation Specialist. Another site on Section 13 T1N R6W was inspected September 21, 1995 by Robert Young and Holland Shepherd, Mining Act Bureau Chief. Santa Fe Pacific Gold did not attend the inspections of the sites on Sections 1 T13W R9W or Section 13 T1N R6W. Another site on Section 17 T13N R9W, for which a prior reclamation inspection was requested (Santa Fe, 1994), was searched for, but could not be found. Without an inspection of the site, no evaluation could be made regarding prior reclamation status.

Inspections of each mine site consisted of a review of information submitted by the mine operator, subsequent discussion with the operator pertaining to mining and reclamation at each site, inspection of the condition of the reclaimed mine sites, line-intercept sampling for estimates of vegetative cover, compilation of plant species lists, measurement of reclaimed soil depths, and photo-documentation. Each of the mine sites was visually inspected for erosion features and hydrologic stability. During a walkover of each site, all slopes, areas of water concentration (ponds, diversions and areas where disturbed areas enter undisturbed lands) were visually inspected for stability. Topsoil placement and distribution also were evaluated at each site. Sampling for topsoil depth consisted of randomly digging a series of holes to identify the depth of topsoil and the presence or absence of potentially toxic wasterock at rooting depth. Grading of all wasterock piles and borrow areas was visually inspected. Placement and closure of portals and vent shafts were verified in the field.

The establishment and relative percent cover of reseeded and native plant species were evaluated in randomly placed transects. Fifty foot transects were evaluated at each mine site using the line intercept method (Bonham 1989). These transects were used to estimate the relative percent cover of each plant species intercepted at 3' intervals along a transect. A total of 17 points per transect was recorded. In addition, a list of species present within a 50' X 6' belt transect adjacent to each transect was compiled. These sampling procedures, however, do not meet sample adequacy. These procedures were conducted to estimate the relative percent cover and to evaluate the diversity of species present at each of the eight mine sites. Additional resources would be needed to fully evaluate the vegetation of these prior reclamation sites to a level of sample adequacy and would require at least 24 additional man-hours of inspection time per site. If it was apparent sufficient vegetation existed on site, or insufficient vegetation existed, no transect evaluations were made. Photos were taken, in these situations, to document the vegetation cover.

Table I  
Santa Fe Pacific Gold Corporation Prior Reclamation Inspection Sites

Name of Mine	Location of Mine	Operator	Surface Owner	Inspected
Unknown	SW1/4 Section 13 T13N R11W	Todilto Exploration	Cerrillos Land Company	Aug. 31, 1995 Young & Tierney
Unknown	Section 13 T1N R6W	M. P. Grace	Unknown	Sept. 21, 1995 Young & Shepherd
Unknown	Section 1 T13W R9W	Kerr-McGee	Sonny Marquez	Sept. 13, 1995 Young & Martinez
Unknown	Section 17 T13N R9W	United Nuclear Corp.	Unknown	Could not be located in field
Haystack	Section 19 T13N R10W	Todilto Exploration	S. Farthree and McKingen	Aug. 31, 1995 Young & Tierney
Section 25 Mine	Section 25 T13N R10W	Reserve Oil and Minerals	S. Berryhill Ranch	Aug. 31, 1995 Young & Tierney
Unknown	Section 31 T13N R9W	United Nuclear Corp.	Unknown	Aug. 31, 1995 Young & Tierney
Faith Mine	Section 29 T13N R9W	Ranchers Exploration	Unknown	Aug. 31, 1995 Young & Tierney
Isabella Mine	Section 7 T13N R9W	Ranchers Exploration	Unknown	Aug. 31, 1995 Young & Tierney
Marquez Mine	Section 23 T13N R9W	United Nuclear Corp.	Sonny Marquez	Aug. 31, 1995 Young & Tierney
Poison Canyon Mine	Section 19 T13N R9W	Reserve Oil and Minerals	Cerrillos Land Company	Aug. 31, 1995 Young & Tierney

## Results and Discussion

### SW1/4 Section 13 T13N R11W

This was a surface mine, located approximately 27 miles north west of the City of Grants, New Mexico. The mine is characterized by red Entrada Sandstone cliffs that tower above it. The uranium mineralization occurred in Todilto Limestone just below the Entrada Sandstone. A barbed wire fence surrounded the site. All structures, trash or junk had been removed from the site. There were no piles or accumulations of toxic or waste material on the site. There were no apparent hazards that could affect public health and safety. Photos documenting vegetation and the general condition of the site are in Appendix A. The site was reclaimed in 1994 and reseeded in the fall of 1994 by Santa Fe Pacific Gold (Eby, 1995). The regrading included, at the request of the surface owner, the construction of six depressions to impound rainwater for livestock (Eby, 1995). There were minor rills from water flowing into these depressions. Topsoil depths across the site averaged 6 inches.

Cattle, sheep, goats, and wildlife have heavily grazed the reclaimed portions of this site and the vegetation showed signs of drought stress. Line-intercept transects showed perennial cover to be approximately 12 percent (Tierney, 1995). The results of the vegetation measurements are presented in Table II. This site was evaluated as having an insufficient vegetation cover to qualify for release.

TABLE II  
SW1/4 Section 13 T13N R11W Vegetation Measurements

Visual	Transect
<i>Ambrosia dumosa</i>	BG
<i>Papaver</i> sp.	BG
<i>Oryzopsis hymenoides</i>	BG
<i>Cleome serrulata</i>	<i>Atriplex canescens</i>
<i>Atriplex canescens</i>	BG
<i>Gutierrezia sarothrae</i>	BG
	BG
	BG
	BG
	BG
	BG
	BG
	BG
	BG
	BG



	BG
	<i>Oryzopsis hymenoides</i>
	Rock

Average Perennial Cover = 12%

Rock Cover = 6%

BG = Bare Ground

### Section 13 T1N R6W

This was a surface mine, located approximately 36 miles north west of the City of Magdalena, New Mexico. The site is within a mile of the Alamo Navajo Indian Reservation. Uranium bearing sandstone was contour-mined along an outcrop in the side of Jaralosa Creek Canyon. The operator, M.P. Grace, operated the mine under a lease from then Santa Fe Pacific Minerals Corporation. The lease was terminated in 1979 and the site was reclaimed in 1980 (Santa Fe, 1994). The total area of disturbance was about 2 acres.

Staff had some difficulty locating this site because natural vegetation had reestablished so well on it. Old mining disturbances were nearly indistinguishable from the natural mounds and ridges of the adjacent undisturbed areas. The mine was located by a red clay uncovered in one pit that was out of place. There was moderate erosion, but the erosion was consistent with that of the surrounding area. A powder magazine, circa 1970's, was left as a mining relic. All other structures, trash and junk had been removed. There were no piles or accumulations of toxic or waste material. There were no apparent hazards that could affect public health or safety.

The site and surrounding area showed signs of grazing impacts. Plant diversity, however, was good with more than 21 native plant species identified on the site. It was very difficult to distinguish this site from the adjacent undisturbed areas, so no transect evaluation was deemed necessary. Photographs documenting vegetation and the general condition of the site are presented in Appendix B. Because of the quality of cover and diversity of plants found on the site, it qualifies for release.

### Section 1 T13W R9W

This mine site is located on a shelf in a canyon wall about 50 feet above the canyon floor. The canyon was eroded into Dakota Sandstone. The mine had been operated by Kerr-McGee under a lease agreement with Santa Fe Pacific Gold and was safeguarded by Kerr-McGee upon termination of that agreement (Santa Fe, 1994). All structures, trash or junk had been removed from the site. There were no piles or accumulations of toxic or waste material on the site. A vertical shaft had been backfilled with nontoxic mine waste material.

The site had been safeguarded but not topsoiled or reseeded. The site is characterized by white fine grained sandstone covered by a few inches of fine white sand. The sand is subsequently being eroded away by wind and water. A mine access road had significant erosion. An impoundment had been constructed to impound sediment from the mine site, however, erosion from the access road was bypassing the impoundment and was entering the mine site. Photographs documenting vegetation and the general condition of the site are presented in Appendix C.

Some native plant species from adjoining areas were invading the disturbance area. Line-intercept transects

indicated vegetation cover to be approximately 29 percent (Young, 1995). Vegetation measurements are presented in Table III. Vegetation on this site is dominated by hairy goldenaster (*Heterotheca villosa*), an unpalatable increaser. Indian ricegrass (*Oryzopsis hymenoides*), was also found growing sparsely on the site. Given the sandy nature of these soils, stands of Indian ricegrass and sand dropseed (*Sporobolus cryptandrus*) should be more prevalent here. Because of the overall lack of diversity and the poor establishment of perennial grasses and forbs, this site does not qualify for release.

TABLE III  
Section 1 T13W R9W Vegetation Measurements

Visual	Transect #1	Transect #2
<i>Gutierrezia sarothrae</i>	BG	<i>Heterotheca villosa</i>
<i>Atriplex canescens</i>	BG	BG
<i>Oryzopsis hymenoides</i>	BG	<i>Heterotheca villosa</i>
<i>Heterotheca villosa</i>	BG	<i>Oryzopsis hymenoides</i>
	BG	<i>Heterotheca villosa</i>
	BG	<i>Heterotheca villosa</i>
	BG	BG
	<i>Heterotheca villosa</i>	BG
	BG	<i>Oryzopsis hymenoides</i>
	BG	BG
	<i>Heterotheca villosa</i>	BG
	BG	<i>Heterotheca villosa</i>
	BG	Bedrock
	BG	Bedrock
	Rock	BG
	<i>Heterotheca villosa</i>	BG
	Rock	BG

Average Vegetative Cover = 29%

#### Section 17 T13N R9W

This site was not shown to MMD staff by Santa Fe Pacific Gold personnel and could not be located in the field. Without a formal inspection of this mine site, no evaluation could be made by MMD personnel regarding the mine's prior reclamation status. This site cannot be released at this time.

Haystack Mine (Section 19 T13N R10W)

### Haystack Mine (Section 19 T13N R10W)

This mine was the original Paddy Martinez discovery. It was a surface mine located approximately 27 miles northwest of Grants, New Mexico. The mine was operated under an agreement with Santa Fe Pacific Minerals Corporation. The uranium mineral was found in the Todilto Limestone. Santa Fe Pacific Gold began reclamation of this site in 1990 under an Environmental Protection Agency (EPA) action that concluded in 1991 (Santa Fe, 1994). At the time of this inspection, Santa Fe claimed to have a letter of release from the EPA (Gallegos, pers. comm.), and indicated that a copy would be sent to MMD. MMD never received this copy.

A barbed wire fence surrounded the site. All structures, trash or junk had been removed from the site. There were no piles or accumulations of toxic or waste material on the site. There were no apparent hazards that could affect public health or safety. There were no erosion features. Photographs documenting the vegetation and the general condition of the site are presented in Appendix E. Topsoil depths across the site ranged from four to six inches.

Grazing by domestic livestock and wildlife has had some impact on the vegetative cover of this reclaimed site. Most of the reclaimed area had been heavily grazed and showed signs of drought stress. Line-intercept transects showed perennial cover to be approximately 32 percent and litter cover 18 percent (Tierney, 1995). Vegetation measurements are presented in Table IV. Because of the perennial quality of plant cover and diversity on this site, staff recommends it for release.

TABLE IV  
Haystack Mine Vegetation Measurements

Visual	Transect #1 North side of	Transect #2 On Wasterock
<i>Atriplex canescens</i>	BG	BG
<i>Chrysothamnus nauseosus</i>	<i>Bouteloua gracillis</i>	<i>Bouteloua gracilis</i>
<i>Sporobolus cryptandrus</i>	<i>Bouteloua gracillis</i>	Litter
<i>Juniperus monsperma</i>	BG	<i>Atriplex canescens</i>
<i>Ambrosia dumosa</i>	<i>Bouteloua gracilis</i>	BG
<i>Kochia scoparium</i>	<i>Oryzopsis hymenoides</i>	<i>Oryzopsis hymenoides</i>
<i>Mirabilis</i> sp.	<i>Oryzopsis hymenoides</i>	BG
<i>Phlox</i> sp.	Litter	BG
<i>Mentzelia pungens</i>	<i>Salsola kali</i>	BG
<i>Salsola kali</i>	Litter	BG
<i>Bouteloua gracilis</i>	BG	BG
<i>Oryzopsis hymenoides</i>	BG	BG
	Litter	<i>Bouteloua gracilis</i>

	<i>Agropyron</i> sp.	<i>Sporobolus cryptandrus</i>
	<i>Oryzopsis hymenoides</i>	<i>Oryzopsis hymenoides</i>
	Litter	Litter
	Litter	Litter

Average Perennial Cover = 32%

Litter Cover = 21%

BG = Bare Ground

## Section 25 Mine

The Section 25 mine is located 14 miles northwest of Grants, New Mexico. This 8-acre site was a surface mine operated by Reserve Oil and Minerals. It was reclaimed and reseeded by Santa Fe Pacific Gold in 1993. Additional reclamation activities were performed in 1994. A barbed wire fence surrounded the site. All structures, trash or junk had been removed from the site. There were no piles or accumulations of toxic or waste material on the site. There were no apparent hazards that could affect public health and safety. There were several topsoil mounds left by Santa Fe because small mammals had extensively burrowed into them and were using them for habitat. Photographs documenting the vegetation and the general condition of the site are presented in Appendix F. The regrading included construction of three large depressions that impounded rainwater for livestock. There was one significant erosion feature and several areas of minor erosion on the sides of these depressions. Topsoil depths across the site were greater than 12 inches. An earthworm found while measuring soil depths at this site is a good sign that the soils are generally nontoxic.

Portions of the reclaimed vegetation have been heavily grazed by wildlife and domestic livestock; however, native plant species were invading the area. Twenty-six native species of plants were identified. Line-intercept transects showed average perennial vegetation cover to be approximately 22 percent (Young, 1995). Vegetation measurements are presented in Table V. Despite the slight increase in the number of perennial species invading this site from adjacent areas, there was poor establishment of the perennial grasses, forbs, and shrubs on the slopes of the depressions and topsoil mounds. Because of the lack of adequate cover, this site does not qualify for release at this time.

TABLE V  
Section 25 Mine Vegetation Measurements

Visual	Transect #1 West Depression (Soil Depth +1')	Transect #2 Middle of Site (Soil Depth +1')	Transect #3 East Side of Site (Soil Depth +1')
<i>Mirabilis multiflora</i>	BG	BG	<i>Oryzopsis hymenoides</i>
<i>Aster</i> sp.	<i>Erigeron</i> sp.	BG	BG
<i>Lepidium</i> sp.	BG	BG	Rock
<i>Cleome serrulata</i>	<i>Senecio longilobus</i>	BG	BG
<i>Sphaeralcea incana</i>	BG	<i>Mentzelia</i> sp.	BG
<i>Senecio longilobus</i>	BG	BG	BG



<i>Chrysothamnus nauseosus</i>	<i>Oryzopsis hymenoides</i>	BG	Rock
<i>Sporobolus cryptandrus</i>	Litter	BG	BG
<i>Gutierrezia sarothrae</i>	Litter	BG	<i>Oryzopsis hymenoides</i>
<i>Boutelloua gracilis</i>	<i>Cleome serrulata</i>	BG	Rock
<i>Agropyron smithii</i>	<i>Oryzopsis hymenoides</i>	BG	BG
<i>Mentzelia decapetala</i>	<i>Oryzopsis hymenoides</i>	BG	BG
<i>Oryzopsis hymenoides</i>	BG	<i>Agropyron smithii</i>	BG
<i>Atriplex canescens</i>	BG	BG	BG
<i>Sparganium</i> sp.	<i>Cleome serrulata</i>	<i>Agropyron smithii</i>	BG
<i>Atriplex canescens</i>	BG	BG	Rock
Fleabane	BG	BG	BG

Average Vegetative Cover = 22%

### Section 31 T13N R9W

This was a surface mine located 14 miles northwest of the Grants, New Mexico. The mine was operated by United Nuclear Corporation until termination of the lease in 1975. The pits were backfilled and otherwise safeguarded in 1987. The site was reclaimed and reseeded by Santa Fe in the fall of 1994 (Santa Fe, 1994). All structures, trash or junk had been removed from the site however, trespass dumping has since taken place. There were no piles or accumulations of toxic or waste material on the site. There were no apparent hazards that could affect public health or safety. There were minor erosion features where water had flowed into depressions. Twenty foot slopes of limestone cobble were left on the south side of the reclaimed area to blend in with a natural limestone outcropping. Several 6 foot high, 50 foot long topsoil stockpiles were left because small animals were burrowing into them and were using them for habitat. Photographs documenting vegetation and general condition of the site are presented in Appendix G.

There was evidence of grazing by livestock and wildlife on this site. Vegetation also showed signs of drought stress. Line-intercept transects showed vegetation cover to be approximately 12 percent (Young, 1995). The results of these vegetation measurements are presented in Table VI. Because of the lack of cover and diversity, staff does not recommend this site for release.

TABLE VI  
Section 31 T13N R9W Vegetation Measurements

Visual	Transect #1	Transect #2	Transect #3
<i>Mirabilis multiflora</i>	Rock	<i>Oryzopsis hymenoides</i>	BG
<i>Sphaeralcea incana</i>	Rock	Rock	BG
<i>Oryzopsis hymenoides</i>	BG	BG	BG
<i>Senecio longilobus</i>	Rock	BG	BG
<i>Ceratoides lanata</i>	Rock	BG	BG
<i>Salvia</i> sp.	Rock	BG	BG
<i>Gutierrezia sarothrae</i>	BG	BG	BG
<i>Atriplex canescens</i>	BG	BG	<i>Oryzopsis hymenoides</i>
<i>Lycium pallidum</i>	<i>Salvia</i> sp.	BG	BG
<i>Sporobolus airoides</i>	Rock	BG	BG
<i>Bouteloua gracilis</i>	Litter	BG	BG
<i>Mentzelia decapetala</i>	Rock	BG	BG
<i>Agropyron smithii</i>	Rock	BG	Rock
	Rock	<i>Oryzopsis hymenoides</i>	<i>Oryzopsis hymenoides</i>
	Rock	BG	<i>Oryzopsis hymenoides</i>
	Rock	Litter	BG
	Rock	BG	Rock

Average Vegetative Cover = 12%

#### Faith Mine (Section 29 T13N R9W)

This underground mine was reclaimed in 1986 (Eby, 1995). Native vegetation from adjoining undisturbed lands had invaded the site and it was difficult to tell that a mine had previously existed on this site. Approximately one acre had recently been regraded and reclaimed. The only other indication of the mine presence was a revegetated mound where a vertical shaft had been backfilled with nontoxic mine waste material (Eby, 1995). All structures, trash or junk had been removed from the site. There were no piles or accumulations of toxic or waste material on the site. Similarly, there were no erosion features. Photographs documenting vegetation and general condition of the site are presented in Appendix H. Topsoil depths across the site ranged from 4 to 6 inches.

As with the other mines, the vegetation had been grazed by wildlife and domestic livestock. The vegetation also showed signs of drought stress. The adequate plant cover and diversity made it unnecessary to perform transect evaluations of the plant community. Staff recommends release of this site. The plant community has been

documented by photographs (See Appendix H).

### Isabella Mine

This was a 2-acre site consisting of a head frame for underground mining. Ranchers Exploration conducted limited operations on this section under a lease from Santa Fe Pacific Minerals Corporation. The site was reclaimed in 1987, but is still accessed by a two-track road from the Old Wilcoxon Ranch. All structures, trash or junk had been removed from the site. The mine shaft had been backfilled with nontoxic mine waste material (Eby, 1995). There were no piles or accumulations of toxic or waste material on the site. There was one erosion feature, 200 feet south of the shaft site, which threatens to cut headward from an unnamed ephemeral tributary of Arroyo del Puerto adjacent to the site. This feature, if left unchecked, will eventually intercept the closed shaft. Mr. Paul Eby said that Santa Fe Pacific Gold would repair it. Photographs documenting the vegetation and the general condition of the site are presented in Appendix I. Topsoil depths across the site ranged from 4 to 6 inches.

The mine site had been grazed by livestock and wildlife and vegetation showed signs of drought stress. Line-intercept transects indicated that vegetation cover was approximately 15 percent (Young, 1995). Results of vegetation measurements are presented in Table VII. Because of the lack of plant cover, this site is not recommended for release.

TABLE VII  
Isabella Mine Vegetation Measurements

Visual	Transect #1	Transect #2
<i>Oryzopsis hymenoides</i>	BG	BG
<i>Bouteloua gracilis</i>	Litter	BG
<i>Atriplex canescens</i>	BG	BG
<i>Juniperus</i> sp.	BG	BG
<i>Cleome serrulata</i>	<i>Kochia scoparia</i>	BG
<i>Agropyron smithii</i>	BG	BG
	BG	<i>Salsola iberica</i>
	BG	BG
	BG	BG
	BG	BG
	<i>Salsola iberica</i>	BG
	Litter	BG
	BG	<i>Salsola iberica</i>
	BG	<i>Kochia scoparia</i>
	BG	BG

	BG	BG
	BG	BG

### Marquez Mine

This site is reached by a two-track road from a ranching complex known as the Marquez Old Home Place. It was the site of a decline shaft adit below a cliff outcropping of the Dakota Sandstone. United Nuclear leased the section from Santa Fe Pacific Minerals Corporation. Open mine features were backfilled in 1987. The site consists of a mine waste pile backfilling a declined shaft adit. The site lies within San Mateo Creek Canyon where the high and constant winds move soils to form sand dunes. San Mateo Creek is ephemeral at this location and windblown sand from the stream bed forms dunes against the cliff face. All structures, trash or junk had been removed from the site with the exception of some pipe and lumber that was left at the request of the surface lessee, Sonny Marquez (Eby, 1995). There were no piles or accumulations of toxic or waste material on the site. Photographs documenting the vegetation and general condition of the site are presented in Appendix J. The decline shaft had been backfilled with nontoxic mine waste material. Regrading of the site also included construction of terraces to break up slopes.

Topsoil depths across the site were greater than 12 inches, but consisted entirely of windblown sand. This area was essentially barren with most of the seed and mulch blown away before vegetation could be established. Native species such as Indian ricegrass (*Oryzopsis hymenoides*), from adjoining areas were starting to invade the disturbance area (Young, 1995). Because of the obvious lack of plant cover at the site no transects were attempted. Staff does not recommend release of this site.

### Poison Canyon Mine

This site is characterized by an abundance of sunflowers and locoweed. The locoweed accumulates selenium for which the canyon (also known as 'Sheep Kill Canyon') was probably named. Reserve Oil and Minerals operated the mine under a lease from Santa Fe Pacific Minerals Corporation. Open mine features were backfilled and the mine reclaimed in 1987 upon termination of the lease. Additional reclamation of the site was conducted in 1993 and 1994 (Santa Fe, 1994). A barbed wire fence surrounded the site. All structures, trash or junk had been removed from the site. There were no piles or accumulations of toxic or waste material on the site. There were a few erosion features including one that was significant. Photographs documenting vegetation and general condition of the site are presented in Appendix K. An inclined shaft portal had been backfilled with nontoxic mine waste material (Santa Fe, 1994). The regrading of this site included construction of mounds, berms, terraces and depressions that impounded rainwater for livestock.

Topsoil depths across the site were approximately 4 inches. Line-intercept transects indicated that perennial vegetative cover was approximately 31 percent. The results of these vegetation measurements are presented in Table VIII. Because of the overall lack of diversity and the poor establishment of perennial grasses and forbs, this site does not qualify for release.

TABLE VIII  
Poison Canyon Vegetation Measurements



TABLE VIII  
Poison Canyon Vegetation Measurements

Visual	Transect #1	Transect #2	Transect #3
<i>Agropyron</i> sp.	Rock	Rock	BG
<i>Aster bigolovii</i>	BG	BG	Rock
<i>Agropyron smithii</i>	<i>Helianthus</i> sp.	BG	<i>Helianthus</i> sp.
<i>Oxytropis lambertii</i>	<i>Helianthus</i> sp.	BG	BG
<i>Mentzelia decapetala</i>	Rock	BG	BG
<i>Gutierrezia sarothrae</i>	BG	<i>Atriplex canescens</i>	Rock
<i>Linum perenne lewisii</i>	BG	<i>Agropyron smithii</i>	Rock
<i>Cleome serrulata</i>	BG	Litter	<i>Helianthus</i> sp.
<i>Melilotus officinalis</i>	BG	<i>Atriplex canescens</i>	<i>Agropyron smithii</i>
<i>Sphaeralcea coccinea</i>	<i>Oryzopsis hymenoides</i>	<i>Salsola iberica</i>	BG
<i>Helianthus</i> sp.	BG	BG	BG
<i>Oryzopsis hymenoides</i>	BG	<i>Atriplex canescens</i>	BG
<i>Hordeum jubatum</i>	<i>Helianthus</i> sp.	<i>Kochia scoparia</i>	BG
<i>Senecio longilobus</i>	Rock	<i>Oryzopsis hymenoides</i>	BG
<i>Sphaeralcea incana</i>	Rock	BG	<i>Helianthus</i> sp.
<i>Atriplex canescens</i>	BG	BG	<i>Helianthus</i> sp.
	BG	Litter	BG

Average Vegetative Cover = 27 %

BG = Bare Ground

## Conclusions and Recommendations

Based on the inspection of the 11 mine sites and review of inspection information with Mining and Minerals Division staff it is recommended that:

Section 19( T13N R10W, a.k.a. Haystack Mine), Section 13 (T 1N R 6W) and Section 29 (T13N R9W, a.k.a. Faith Mine)

be released from further requirements of the New Mexico Mining Act. The other mine sites:

SW1/4 of Section 13 (T 13N R11W), Section 1 (T 13W R 9W), Section 31 (T 13N R 9W), Section 7 (T13N R 9W, a.k.a. Isabella Mine), Section 23 (T 13N R 9W, a.k.a. Marquez Mine), Section 25 (T 13N R 10W), and Section 19 (T 13N R9W, a.k.a. Poison Canyon Mine)

do not meet the environmental conditions that allow for the development of a 'self-sustaining ecosystem' as defined in Rule 1. and put forth in Rule 5.7A of the New Mexico Mining Act. Some of these sites were reclaimed in July 1994, so it is difficult to determine vegetation success. One season of growth in the areas under evaluation does not provide sufficient time to make this determination. The sites remain at a very early successional stage and contain mostly weedy species or no species.

Based on oral communications with the operator, and on the inspected condition of these remaining reclaimed sites as documented by this inspection report, it is clear that the operator has made an effort to complete the required reclamation. It is recommended that the Director of MMD give a variance to Santa Fe Pacific Gold Corporation from meeting the deadline of September 30, 1995 for prior reclamation under the New Mexico Mining Act Rules for: the SW1/4 of Section 13 (T 13N R11W), Section 1(T 13W R 9W), Section 31 (T 13N R 9W), Section 7 (T13N R 9W, a.k.a. Isabella Mine), Section 23 (T 13N R 9W, a.k.a. Marquez Mine), and Section 19 (T 13N R9W, a.k.a. Poison Canyon Mine) mine sites. This variance would stipulate that inspections will be conducted by MMD during the late summer of 1997 at each of these remaining sites to determine if the conditions necessary for development of a 'sustainable ecosystem' are then present on-site, and if any further actions including (but not limited to) reseeding or interseeding by the operator is necessary.

The Section 17 (T 13N R 9W) mine site was not adequately identified by Santa Fe Pacific Gold for inspection by MMD. The Mining and Minerals Division attempted to locate the site, but was unable to do so. Therefore, no inspection for prior reclamation status was made. This site could also be addressed under a variance.

## References

- Bonham, C. D. 1989. *Measurements for Terrestrial Vegetation*. Wiley-Interscience. 338 pp.
- Eby, Paul G. 1995. Director-Field Operations, Santa Fe Pacific Gold Corporation, Personal Communication.
- Santa Fe (Santa Fe Pacific Gold Corporation) 1994. Prior Reclamation Request.
- Tierney, Robyn 1995. Reclamation Specialist, MMD, Field Notes.
- Young, Robert S. 1995. Environmental Engineer, MMD, Field Notes.

# **Poison Canyon Inspection Report**

**Date of Inspection:**

August 16, 2000

**Present during inspection:**

MMD representatives: Karen Garcia, Holland Shepherd,  
Newmont Mining Co. representatives: Joe Pollara

**Background**

Reclamation at the Poison Canyon Mine site occurred during the spring of 1994. Santa Fe Pacific Gold, the company that owned the mine at that time, applied to the Mining and Minerals Division (MMD) for a release from the New Mexico Mining Act (NMMA) under the Prior Reclamation provision in Subpart 510. After conducting an inspection in September of 1995, MMD determined that the site could not be released at that time. Santa Fe Pacific Gold then applied for a variance in May 1996 to allow more time for their reclamation efforts to show results. MMD granted the variance on July 24, 1996 for a period up to 5 years. In early summer of 2000, MMD was contacted by Newmont Mining Company, who now owns the mine, to request an inspection by MMD for release of the site.

On August 16, 2000, Karen Garcia and Holland Shepherd of the Mining and Minerals Division met with Joe Pollara a representative from Newmont Mining Company to inspect and conduct vegetative surveys of the Poison Canyon Mine reclamation.

The site is located in Township 13N Range 9W Central portion of Section 19, about 15 miles north of Grants NM, (See attached map). The road going into the site disappears near a large arroyo at a fence line about ½ mile from the actual mine site. It appears that the roadbed had been built on top of an existing arroyo or drainage, and now has been washed away and severely eroded.

The mine was a combination open pit and underground operation. The adit and shafts were apparently covered, as we found no signs of their existence. We noted two main pit areas along with two overburden piles that had been reclaimed and seeded. We began by surveying the southern pit area.

**Methodology and Results**

The methodology used to conduct the vegetative survey included using random numbers to pick a transect location in the reclaimed area. Then a random compass direction was



Poison Canyon  
Inspection Report  
August 2000

chosen to determine direction of transect. A 100 ft. tape was used to obtain percent relative cover data by identifying plant 'hits' every 2 ft. Five transects were run, four in the southern pit and one in the southwest pit area. The survey results are shown on the attached Vegetation Survey Results form. The statistical adequacy formula  $s^2t^2/(.1x)^2$  was used to ensure that an adequate number of transects had been conducted. In fact the variability was so low that 3 transects would have been adequate.

In order to determine if seeding efforts were successful MMD must measure against either a reference area or a technical standard agreed upon with the mine operator. In this case the Natural Resources Conservation Service, Range Site Description (RSD) Sandy (WP-2) was determined to be an appropriate standard. It was agreed that the percent cover value at the site must be at least 75% of the RSD for perennial grasses and forbs. The RSD contained a value of 18%, therefore, the site must have at least a 13.5% canopy cover of perennial grasses and forbs. The survey results indicate an average cover of 34%, well over the minimum value required. The cover values ranged from 32% up to 40% canopy cover. Indian rice grass dominated the dryer upper slopes with western wheat grass dominating the lower slightly wetter environments.

In addition, the site must contain a diversity of plant species indicative of a healthy and stable plant community. Again, referring to the RSD as a guide, the site should contain at least 2 cool season and 2 warm season grasses, as well at least one shrub and forb species. As can be seen in the vegetative survey results, the site does meet the diversity standard as well. Western Wheatgrass and Indian Rice grass being the cool season grasses and Blue Grama and Sideoats Grama representing warm season grasses.

Overall, the site contains a well established four-wing saltbush (*Atriplex spp.*) western wheatgrass (*Pascopyrum Smithii*)/ Blue Grama (*Bouteloua gracilis*) community. This is consistent with the natural vegetation composition in the surrounding undisturbed areas adjacent to the mine site. Though there is a small pocket of sunflower (*Heliantus spp.*), an undesirable annual forb, persisting in the pit bottom, indications are that the sunflower population has been receding and will continue to do so as it is replaced by more permanent perennial species.

### **Erosion Control**

The only area of concern that would inhibit classification as a site allowing for a self sustaining ecosystem would be the presence of a very deep (4 ft) erosion gully now encroaching into the reclamation area. The gully may have been caused by lack of erosion control and maintenance of an old roadbed that was built at the time the mine was active. The 1995 inspection report made mention of, "...a few erosion features including one that was significant". Since there has been no erosion control or maintenance of the site since the reclamation work in 1994, these erosion features are still present. The rills and small gullies noted on side slopes of the pit area will, in all likelihood, fill in and vegetate naturally. The large gully west of the pit, however, has the potential to continue headcutting up into the reclaimed area.

### **Recommendations**

The results of the vegetative survey clearly show that the site meets the cover and diversity standard agreed upon by MMD and the operator. Because the gully erosion at the site may compromise the stability of the reclamation, it is the recommendation of this inspector to have the operator take action to prevent the gully from causing further damage in the area. This could be accomplished by bringing in a dozer to riprap the sides and headcut portion of the gully. It would be of minimal cost and disturbance but would ensure that the largely successful reclamation efforts made in the past would not be negatively impacted. Once that is completed, it would be appropriate to release the site.

### **Attachments:**

Vegetative Survey Results  
Field Data Sheets  
NRCS Range Site Description

**Vegetative Survey Results  
Poison Canyon  
August 16, 2000**

**Summary**

	<b>Transect # 1</b>	<b>Transect # 2</b>	<b>Transect # 3</b>	<b>Transect #4</b>	<b>Transect # 5</b>
<b>Perennial grass/forbs</b>	32%	32%	40%	36%	30%
<b>Litter</b>	14%	2%	12%	12%	20%
<b>Bareground</b>	54%	64%	48%	40%	50%

**Key to Abbreviations Used in this Evaluation**

Rock = Rock with diameter > 2 inches

BG = Bare Ground

Litter = Plant Litter

Agsm = *Agropyron smithii*

Bogr = *Bouteloua gracilis*

Bocu = *Bouteloua curtipendula*

Atca = *Atriplex canescens*

Clse = *Cleome serrulata*

Orhy = *Oryzopsis hymeniodes*

Hean = *Helianthus annuus*

Pefo = unknown perennial forb

**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 1 of 5

Date: 8/16/00 Location: Bottom of South Pit Transect: 1 Degrees: 73

Line Length: 100 ft Investigators: Karen and Garcia and Holland Shepherd

1. BG	21. Litter	41. Bocu
2. Bogr	22. Litter	42. Bocu
3. BG	23. BG	43. BG
4. Orhy	24. Litter	44. Bocu
5. Atca	25. BG	45. BG
6. Bogr	26. BG	46. BG
7. BG	27. BG	47. BG
8. Bocu	28. BG	48. Litter
9. BG	29. Agsm	49. Bocu
10. BG	30. Agsm	50. Litter
11. BG	31. BG	
12. BG	32. Litter	
13. BG	33. Litter	
14. BG	34. BG	
15. BG	35. BG	
16. BG	36. BG	
17. Orhy	37. Atca	
18. Orhy	38. BG	
19. Orhy	39. BG	
20. Orhy	40. Bogr	

Total Rock % 0

Total Bare Ground % 54

Total Plant Cover % 32

Total Litter % 14

Perennial % 32 Annual % 0

**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 2 of 5

Date: 8/16/00 Location: Bottom of South Pit Transect: 2 Degrees: 163

Line Length: 100 ft Investigators: Karen Garcia and Holland Shepherd

1. BG	21. BG	41. BG
2. BG	22. BG	42. BG
3. Rock	23. BG	43. Pefo
4. BG	24. BG	44. BG
5. Bocu	25. BG	45. BG
6. BG	26. BG	46. Agsm
7. BG	27. Agsm	47. BG
8. BG	28. Orhy	48. BG
9. BG	29. Agsm	49. Litter
10. Orhy	30. Atca	50. BG
11. Orhy	31. Atca	
12. Bocu	32. BG	
13. Orhy	33. BG	
14. BG	34. BG	
15. Rock	35. BG	
16. Atca	36. BG	
17. Agsm	37. BG	
18. Atca	38. BG	
19. Atca	39. BG	
20. BG	40. BG	

Total Rock % 2

Total Bare Ground % 64

Total Plant Cover % 32

Total Litter % 2

Perennial % 32 Annual % 0



**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 3 of 5

Date: 8/16/00 Location: Bottom of South Pit Transect: 3 Degrees: 123

Line Length: 100 Investigators: Karen Garcia and Holland Shepherd

1. BG	21. BG	41. Clse
2. Atca	22. BG	42. BG
3. Litter	23. BG	43. BG
4. BG	24. BG	44. Clse
5. Litter	25. Atca	45. BG
6. Atca	26. Bogr	46. BG
7. BG	27. BG	47. BG
8. BG	28. BG	48. BG
9. BG	29. BG	49. Litter
10. Atca	30. Agsm	50. BG
11. BG	31. BG	
12. Bocu	32. Bocu	
13. BG	33. Atca	
14. Bogr	34. Atca	
15. Atca	35. Atca	
16. Litter	36. Agsm	
17. Orhy	37. Atca	
18. Litter	38. Atca	
19. BG	39. BG	
20. Litter	40. Agsm	

Total Rock % 0

Total Bare Ground % 48

Total Plant Cover % 40 Perennial % 40 Annual % 0

Total Litter % 12

**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 4 of 5

Date: 8/16/00 Location: Bottom of South Pit Transect: 4 Degrees: 140

Line Length: 100 Investigators: Karen Garcia and Holland Shepherd

1. BG	21. Agsm	41. Agsm
2. BG	22. Agsm	42. Litter
3. BG	23. Agsm	43. Litter
4. BG	24. BG	44. Agsm
5. BG	25. Agsm	45. BG
6. BG	26. Hean	46. Agsm
7. BG	27. Clse	47. Litter
8. Bogr	28. Hean	48. Litter
9. Bogr	29. Hean	49. BG
10. Litter	30. Hean	50. BG
11. Atca	31. BG	
12. BG	32. Hean	
13. BG	33. BG	
14. Litter	34. BG	
15. BG	35. BG	
16. Atca	36. BG	
17. Atca	37. Agsm	
18. Atca	38. BG	
19. Atca	39. Agsm	
20. Atca	40. BG	

Total Rock % 0

Total Bare Ground % 40

Total Plant Cover % 46

Total Litter % 12

Perennial % 36 Annual % 10

**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 5 of 5

Date: 8/16/00 Location: Bottom of Southwest Pit Transect: 5 Degrees: 241

Line Length: 100 ft Investigators: Karen Garcia and Holland Shepherd

1. Litter	21. Agsm	41. BG
2. BG	22. BG	42. BG
3. BG	23. BG	43. BG
4. Orhy	24. BG	44. BG
5. Litter	25. BG	45. BG
6. BG	26. Agsm	46. Orhy
7. BG	27. Litter	47. BG
8. BG	28. Litter	48. BG
9. BG	29. Litter	49. Bocu
10. BG	30. BG	50. Litter
11. Litter	31. Agsm	
12. BG	32. Agsm	
13. Litter	33. Agsm	
14. BG	34. BG	
15. BG	35. Agsm	
16. Agsm	36. Litter	
17. Agsm	37. Orhy	
18. BG	38. Orhy	
19. BG	39. Orhy	
20. BG	40. Orhy	

Total Rock % 0

Total Bare Ground % 50

Total Plant Cover % 30

Total Litter % 20

Perennial % 30 Annual %

Site Name Boston Canyon Data Sheet No. 2 of      Sec       
 Date 8/16/00 Location      Quadrant 2 Degrees 1630 Twp       
 Line Length 100 ft Investigators HS BG Rng     

<u>1</u>	BG	<u>21</u>	BG	<u>41</u>	BG	<u>61</u>		<u>81</u>
<u>2</u>	BG	<u>22</u>	BG	<u>42</u>	BG	<u>62</u>		<u>82</u>
<u>3</u>	Rock	<u>23</u>	BG	<u>43</u>	<del>Atca</del> Refo	<u>63</u>		<u>83</u>
<u>4</u>	BG	<u>24</u>	BG	<u>44</u>	BG	<u>64</u>		<u>84</u>
<u>5</u>	Bacu	<u>25</u>	BG	<u>45</u>	BG	<u>65</u>		<u>85</u>
<u>6</u>	BG	<u>26</u>	BG	<u>46</u>	Asm	<u>66</u>		<u>86</u>
<u>7</u>	BG	<u>27</u>	Asm	<u>47</u>	BG	<u>67</u>		<u>87</u>
<u>8</u>	Ref	<u>28</u>	Orhy	<u>48</u>	BG	<u>68</u>		<u>88</u>
<u>9</u>	BG	<u>29</u>	Asm	<u>49</u>	Litter	<u>69</u>		<u>89</u>
<u>10</u>	Orhy	<u>30</u>	Atca	<u>50</u>	BG	<u>70</u>		<u>90</u>
<u>11</u>	Orhy	<u>31</u>	Atca	<u>51</u>		<u>71</u>		<u>91</u>
<u>12</u>	Bacu	<u>32</u>	BG	<u>52</u>		<u>72</u>		<u>92</u>
<u>13</u>	Orhy	<u>33</u>	BG	<u>53</u>		<u>73</u>		<u>93</u>
<u>14</u>	BG	<u>34</u>	BG	<u>54</u>		<u>74</u>		<u>94</u>
<u>15</u>	Rock	<u>35</u>	BG	<u>55</u>		<u>75</u>		<u>95</u>
<u>16</u>	Atca	<u>36</u>	BG	<u>56</u>		<u>76</u>		<u>96</u>
<u>17</u>	Asm	<u>37</u>	BG	<u>57</u>		<u>77</u>		<u>97</u>
<u>18</u>	Atca	<u>38</u>	BG	<u>58</u>		<u>78</u>		<u>98</u>
<u>19</u>	Atca	<u>39</u>	BG	<u>59</u>		<u>79</u>		<u>99</u>
<u>20</u>	BG	<u>40</u>	BG	<u>60</u>		<u>80</u>		<u>100</u>

Total Rock (R) %       
 Total Bare Ground (BG) %       
 Total Plant Cover % 32 Perennial      Annual       
 Total Litter (L) %

Site Name Poison Canyon Data Sheet No. 3 of      Sec       
 Date 8/14 Location      Quadrant      Degrees 123 Twp       
 Line Length      Investigators      Rng     

<u>1</u>	BG	<u>21</u>	BG	<u>41</u>	Chrome	<u>61</u>	<u>81</u>
<u>2</u>	AtCa	<u>22</u>	BG	<u>42</u>	BG	<u>62</u>	<u>82</u>
<u>3</u>	Lit	<u>23</u>	BG	<u>43</u>	BG	<u>63</u>	<u>83</u>
<u>4</u>	BG	<u>24</u>	BG	<u>44</u>	Chrome	<u>64</u>	<u>84</u>
<u>5</u>	Lit	<u>25</u>	AtCa	<u>45</u>	BG	<u>65</u>	<u>85</u>
<u>6</u>	AtCa	<u>26</u>	BoGr	<u>46</u>	BG	<u>66</u>	<u>86</u>
<u>7</u>	BG	<u>27</u>	BG	<u>47</u>	BG	<u>67</u>	<u>87</u>
<u>8</u>	BG	<u>28</u>	BG	<u>48</u>	BG	<u>68</u>	<u>88</u>
<u>9</u>	BG	<u>29</u>	BG	<u>49</u>	Lit	<u>69</u>	<u>89</u>
<u>10</u>	AtCa	<u>30</u>	AgSom	<u>50</u>	BG	<u>70</u>	<u>90</u>
<u>11</u>	BG	<u>31</u>	BG	<u>51</u>		<u>71</u>	<u>91</u>
<u>12</u>	BoGr	<u>32</u>	BoGr	<u>52</u>		<u>72</u>	<u>92</u>
<u>13</u>	BG	<u>33</u>	AtCa	<u>53</u>		<u>73</u>	<u>93</u>
<u>14</u>	BoGr	<u>34</u>	AtCa	<u>54</u>		<u>74</u>	<u>94</u>
<u>15</u>	AtCa	<u>35</u>	AtCa	<u>55</u>		<u>75</u>	<u>95</u>
<u>16</u>	Lit	<u>36</u>	AgSom	<u>56</u>		<u>76</u>	<u>96</u>
<u>17</u>	Orch	<u>37</u>	AtCa	<u>57</u>		<u>77</u>	<u>97</u>
<u>18</u>	Lit	<u>38</u>	AtCa	<u>58</u>		<u>78</u>	<u>98</u>
<u>19</u>	BG	<u>39</u>	BG	<u>59</u>		<u>79</u>	<u>99</u>
<u>20</u>	Lit	<u>40</u>	AgSom	<u>60</u>		<u>80</u>	<u>100</u>

Total Rock (R) %       
 Total Bare Ground (BG)%       
 Total Plant Cover % 40 Perennial      Annual       
 Total Litter (L)%

Site Name Poison Canyon Data Sheet No. 4 of      Sec       
 Date 8/15 Location 100 ft Quadrant 4 Degrees      Twp       
 Line Length      Investigators K.G. & H.B. Rng     

<u>1</u>	BG	<u>21</u>	Asm	<u>41</u>	Asm	<u>61</u>	<u>81</u>
<u>2</u>	BG	<u>22</u>	Asm	<u>42</u>	Litter	<u>62</u>	<u>82</u>
<u>3</u>	BG	<u>23</u>	Asm	<u>43</u>	Litter	<u>63</u>	<u>83</u>
<u>4</u>	BG	<u>24</u>	BG	<u>44</u>	Asm	<u>64</u>	<u>84</u>
<u>5</u>	BG	<u>25</u>	Asm	<u>45</u>	BG	<u>65</u>	<u>85</u>
<u>6</u>	BG	<u>26</u>	Hean	<u>46</u>	Asm	<u>66</u>	<u>86</u>
<u>7</u>	BG	<u>27</u>	Quome	<u>47</u>	Litter	<u>67</u>	<u>87</u>
<u>8</u>	Boar	<u>28</u>	Hean	<u>48</u>	Litter	<u>68</u>	<u>88</u>
<u>9</u>	Boar	<u>29</u>	Hean	<u>49</u>	BG	<u>69</u>	<u>89</u>
<u>10</u>	Litter	<u>30</u>	Hean	<u>50</u>	BG	<u>70</u>	<u>90</u>
<u>11</u>	Atca	<u>31</u>	BG	<u>51</u>		<u>71</u>	<u>91</u>
<u>12</u>	BG	<u>32</u>	Hean	<u>52</u>		<u>72</u>	<u>92</u>
<u>13</u>	BG	<u>33</u>	BG	<u>53</u>		<u>73</u>	<u>93</u>
<u>14</u>	Litter	<u>34</u>	BG	<u>54</u>		<u>74</u>	<u>94</u>
<u>15</u>	BG	<u>35</u>	BG	<u>55</u>		<u>75</u>	<u>95</u>
<u>16</u>	Atca	<u>36</u>	BG	<u>56</u>		<u>76</u>	<u>96</u>
<u>17</u>	Atca	<u>37</u>	Asm	<u>57</u>		<u>77</u>	<u>97</u>
<u>18</u>	Atca	<u>38</u>	BG	<u>58</u>		<u>78</u>	<u>98</u>
<u>19</u>	Atca	<u>39</u>	Asm	<u>59</u>		<u>79</u>	<u>99</u>
<u>20</u>	Atca	<u>40</u>	BG	<u>60</u>		<u>80</u>	<u>100</u>

Total Rock (R) %       
 Total Bare Ground (BG) %       
 Total Plant Cover % 46% Perennial 36% Annual 10%  
 Total Litter (L) %



Site Name POISON Canyon Data Sheet No. 5 of      Sec       
 Date 8/1 Location      Quadrant 5 Degrees 241 Twp       
 Line Length      Investigators      Rng     

<u>1</u>	Lit	<u>21</u>	AgSom	<u>41</u>	BG	<u>61</u>	<u>81</u>
<u>2</u>	BG	<u>22</u>	BG	<u>42</u>	BG	<u>62</u>	<u>82</u>
<u>3</u>	BG	<u>23</u>	BG	<u>43</u>	BG	<u>63</u>	<u>83</u>
<u>4</u>	Grhy	<u>24</u>	BG	<u>44</u>	BG	<u>64</u>	<u>84</u>
<u>5</u>	Lit	<u>25</u>	BG	<u>45</u>	BG	<u>65</u>	<u>85</u>
<u>6</u>	BG	<u>26</u>	AgSom	<u>46</u>	Orhy	<u>66</u>	<u>86</u>
<u>7</u>	BG	<u>27</u>	Lit	<u>47</u>	BG	<u>67</u>	<u>87</u>
<u>8</u>	BG	<u>28</u>	Lit	<u>48</u>	BG	<u>68</u>	<u>88</u>
<u>9</u>	BG	<u>29</u>	Lit	<u>49</u>	BG	<u>69</u>	<u>89</u>
<u>10</u>	BG	<u>30</u>	BG	<u>50</u>	Lit	<u>70</u>	<u>90</u>
<u>11</u>	Lit	<u>31</u>	AgSom	<u>51</u>		<u>71</u>	<u>91</u>
<u>12</u>	BG	<u>32</u>	AgSom	<u>52</u>		<u>72</u>	<u>92</u>
<u>13</u>	Lit	<u>33</u>	AgSom	<u>53</u>		<u>73</u>	<u>93</u>
<u>14</u>	BG	<u>34</u>	BG	<u>54</u>		<u>74</u>	<u>94</u>
<u>15</u>	BG	<u>35</u>	AgSom	<u>55</u>		<u>75</u>	<u>95</u>
<u>16</u>	AgSom	<u>36</u>	Lit	<u>56</u>		<u>76</u>	<u>96</u>
<u>17</u>	AgSom	<u>37</u>	Orhy	<u>57</u>		<u>77</u>	<u>97</u>
<u>18</u>	BG	<u>38</u>	Grhy	<u>58</u>		<u>78</u>	<u>98</u>
<u>19</u>	BG	<u>39</u>	Grhy	<u>59</u>		<u>79</u>	<u>99</u>
<u>20</u>	BG	<u>40</u>	Grhy	<u>60</u>		<u>80</u>	<u>100</u>

Total Rock (R) %       
 Total Bare Ground (BG) %       
 Total Plant Cover % 30 Perennial      Annual       
 Total Litter (L) %

## RANGE SITE DESCRIPTION

## Section II E, Technical Guide

A. SITE NO. D36-113-N

Sandy (WP-2)

## B. PHYSIOGRAPHIC FEATURES

This site usually occurs on level to gently sloping or undulating topography of upland plains. Slopes average less than 10 percent. Elevations range from about 6,000 feet to just over 7,200 feet.

## C. CLIMATIC FEATURES

1. Average annual precipitation varies from about 10 inches to just over 16 inches. Fluctuations ranging from about 5 inches to 25 inches are not uncommon. The overall climate is characterized by cold dry winters in which winter moisture is less than summer. As much as half or more of the annual precipitation can be expected to come during the period of July through September. Thus, fall conditions are often more favorable for good growth of cool-season perennial grasses, shrubs, and forbs than are those of spring.

2. The average frost-free season is about 120 days and extends from approximately mid-May to early or mid-September. Average annual air temperatures are 50° F. or lower, and summer maximums rarely exceed 100° F. Winter minimums typically approach or go below zero. Monthly mean temperatures exceed 70° F. for the period of July and August.

3. Rainfall patterns generally favor warm-season perennial vegetation, while the temperature regime tends to favor cool-season vegetation. This creates a somewhat complex community of plants on a given range site which is quite susceptible to disturbance and is at or near its productive potential only when both the natural warm- and cool-season dominants are present.

## D. SOILS

1. The soils of this site are moderately deep to deep, well drained, and may or may not be calcareous throughout. Typically, the surface layer is a sandy loam, fine sandy loam, or loamy fine sand at least 5 or 6 inches thick over sandy loam to clay loam subsoils. Permeability is moderately slow to moderately rapid, and the available water capacity is moderate to high.

The soils of this site are subject to soil blowing.

## 2. Characteristic soils are:

Telescope loamy fine sand

## 3. Other soils included are:

Royosa fine sand

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January 1980

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## E. POTENTIAL NATURAL PLANT COMMUNITY

1. This site is characterized by both warm- and cool-season grasses, scattered shrubs, half-shrubs, and forbs. Blue grama and western wheatgrass are co-dominants, with Indian ricegrass and dropseed closely associated. Principal shrubs and half-shrubs include fourwing saltbush, winterfat, and sand sagebrush. Rocky Mountain beeplant is often the most noticeable forb. Broom snakeweed is most common in certain wet years and when the plant community deteriorates from its potential.

2. Composition of Potential Plant Community

Approximate percentage of total annual herbage production.

Grasses and Grasslike - 75-85%		(Shrubs, half-shrubs, vines and trees)	Forbs - 5-10%	
Western wheatgrass	15-20	Woody - 10-15%	Perennials	3-8
Blue grama	25-30	Fourwing saltbush	Annuals	1-5
Indian ricegrass	5-10	Winterfat		
Needleandthread	)	Bigelow sagebrush		
Bottlebrush squirreltail	5-10	Broom snakeweed		
New Mexico feathergrass	)	Rabbitbrush		
Sand dropseed	)	Sand sagebrush		
Spike dropseed	10-15	Spineless horsebrush		
Galleta	1-5			
Ring muhly	)			
Sandhill muhly	3-5			
False buffalograss	)			
Threeawns spp.	1-5			
Black grama	1-5			
Spike muhly	1-3			

3. Canopy Cover

Shrubs and half-shrubs - 5% @ 75% → 3.75%

4. Ground Cover (Average Percent of Surface Area)

Grasses, grasslike, forbs	18 @ 75% → 13.5%
Bare ground	69
Surface gravel	1
Surface cobble and stones	0
Litter - percent of area	12
av. depth in cm.	2

## F. TOTAL ANNUAL HERBAGE PRODUCTION (Air-dry, lbs./ac.)

Favorable years - 850 (Average)

Unfavorable years - 325 (Average) 244 - 638 1/4 ac.

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## G. SITE INTERPRETATIONS

1. Grazing

This site is suitable for grazing by most kinds and classes of livestock in all seasons of the year but is poorly suited for continuous year-long grazing if potential natural vegetation is to be maintained. Under such use, cool-season grasses, such as western wheatgrass, Indian ricegrass, and needleandthread, may decline or even disappear. If use is heavy and prolonged, many of the more palatable warm-season species will also decline. The site in a typically deteriorated condition may be characterized by low-vigor, sod-like blue grama and possibly some galleta. Further deterioration is characterized by increasing amounts of bare ground, increases in ring muhly, sandhill muhly, threeawns and rabbitbrush, and by certain annual forbs. Production in these instances may be cut to one-third or less of the potential, and soil blowing may become severe. The site, in certain instances, is subject to invasion by woody species such as pinyon pine and juniper.

2. Wood Products

This site has no significant value for wood products.

3. Habitat for Wildlife

This range site provides habitat which supports a resident animal community that is characterized by pronghorn antelope, kit fox, badger, desert cottontail, spotted ground squirrel, Ord's kangaroo rat, white-throated woodrat, Botta's pocket gopher, plains pocket mouse, Northern grasshopper mouse, ferruginous hawk, mourning dove, meadowlark, plains spadefoot toad, Eastern fence lizard, plateau whiptail, short-horned lizard and prairie rattlesnake.

Common raven and prairie falcon hunt over the site.

4. Hydrologic InterpretationsSoil SeriesHydrologic Groups

Telescope  
Royosa fine sand

B  
A

Runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

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January 1980

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5. Recreation and Natural Beauty

This site offers fair potential for hiking, horseback riding, nature observation, photography, camping, and picnicking. It offers good to excellent potential for hunting of pronghorn antelope.

In years of favorable moisture, colorful wildflowers dot the landscape.

6. Endangered Plants and Animals

To be added as reliable information becomes available.

## H. OTHER PERTINENT INFORMATION

1. Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

<u>Range Condition</u>	<u>Ac/Aum</u>
Excellent (100-76)	3.6-4.7
Good (75-51)	4.5-7.0
Fair (50-26)	6.8-12.0
Poor (25-0)	12.0+

2. Relative Quality of Plants for Animal Use 1/

## (a) Cattle

<u>Primary</u>	<u>Secondary</u>	<u>Low Value</u>
Western wheatgrass	Blue grama	Broom snakeweed
Indian ricegrass	Galleta	Rabbitbrush
Needleandthread	Bigelow sagebrush	Spineless horsebrush
New Mexico feathergrass	Sand dropseed	Sandhill muhly
Winterfat	Threeawns spp.	Ring muhly
Fourwing saltbush	Most perennial forbs	False buffalograss
Black grama		
Bottlebrush squirreltail		

## (b) Antelope and Sheep

<u>Primary</u>	<u>Secondary</u>	<u>Low Value</u>
Winterfat	Blue grama	Broom snakeweed
Bigelow sagebrush	New Mexico feathergrass	Rabbitbrush
Western wheatgrass	Needleandthread	Sand sagebrush
Indian ricegrass	Threeawns spp.	Sandhill muhly
Fourwing saltbush	Dropseeds	Spineless horsebrush
Most perennial forbs		



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FROM : NRCs GRANTS FO

## I. IDENTIFICATION AND AUTHORIZATION

1. USDA SCS  
Albuquerque, NM  
MLRA 36
2. Field Offices:  
Reserve  
Magdalena/Quemado
3. Field Office Sample Location

## 4. Approved:

*Alfresta* 2/15/80  
State Range Conservationist Date

*Dunwood E. Ball* 3/27/80  
WTSC Range Conservationist Date

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# Legend and Definitions for Range Site Descriptions.

- 1/ This rating system provides general guidance as to animal preference for plant species. It also indicates possible competition between kinds of animals for the various plants. Grazing preference changes from time to time and place to place, depending upon the animals, upon plant palatability and nutritive value, stage of growth and season of use, relative abundance, and associated plants. Grazing preference does not necessarily reflect a plant's ecological place in the climax plant community.

The following definitions apply to cattle, sheep, goats, deer, and antelope grazing:

Primary: These species generally decrease when the climax plant community is subjected to continuous heavy grazing pressure by the animals listed. These species are normally grazed first and preferred by the designated grazing animals when given free choice.

Secondary: These plants usually increase initially, then decrease when the site is subjected to continuous heavy grazing use by the animals listed. These plants are normally grazed after primary plants become scarce under free choice, or along with them under intensive grazing systems.

Low Value: These plants continue to increase with heavy, continuous grazing use of the site. These plants are not normally grazed until primary and secondary species are gone and animals are forced to eat them.

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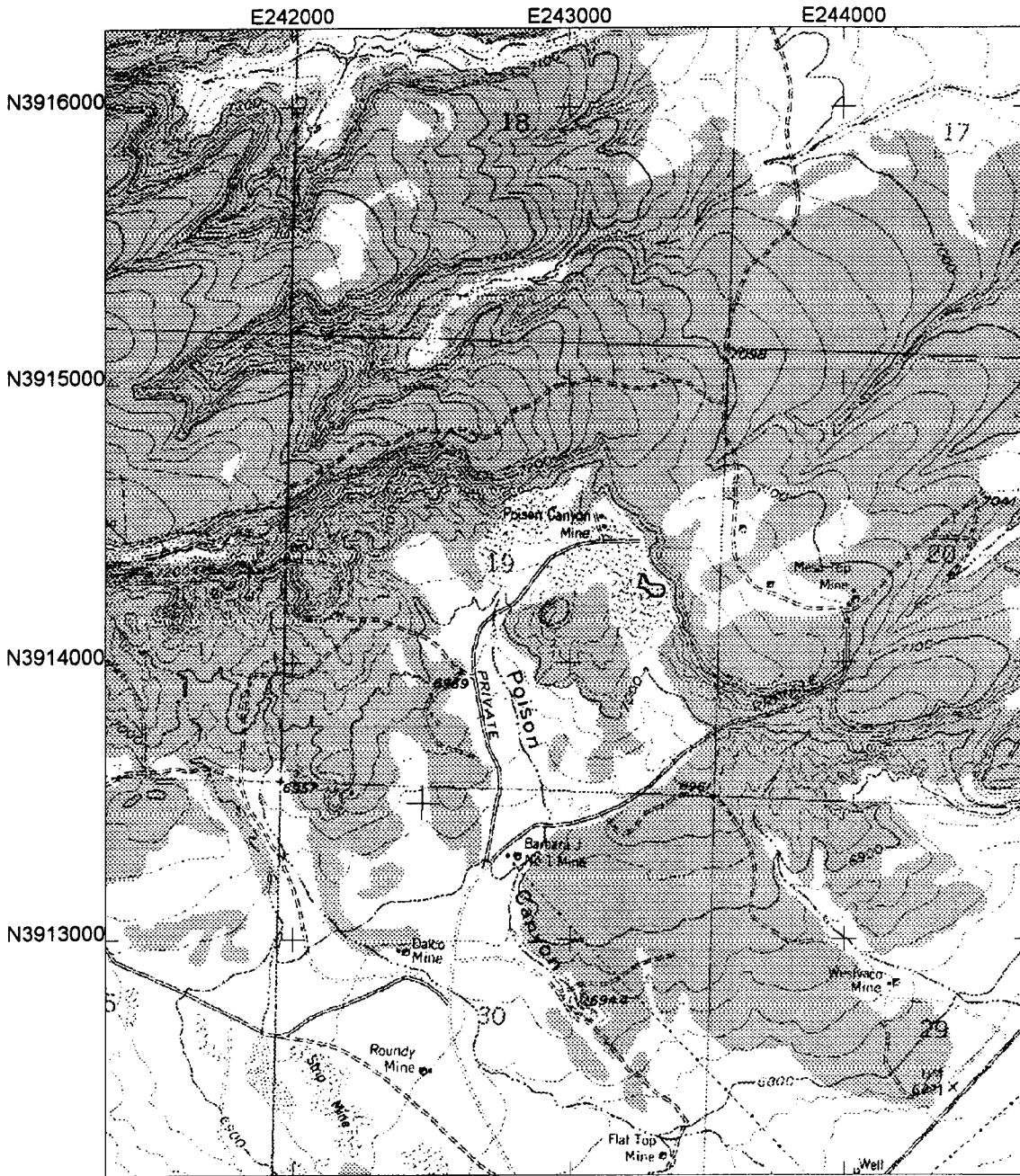
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January 1980

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DOS LOMAS QUAD

# Poison Canyon Mine

8/16/00

Universal Transverse Mercator  
13 North  
NAD 1927 (Western US)



Scale 1:24000  
0 3000  
Feet

r081621a.cor  
8/21/2000  
Pathfinder Office  
 Trimble

# **Poison Canyon Inspection Report**

## **Date of Inspection:**

August 16, 2000

## **Present during inspection:**

MMD representatives: Karen Garcia, Holland Shepherd,  
Newmont Mining Co. representatives: Joe Pollara

## **Background**

Reclamation at the Poison Canyon Mine site occurred during the spring of 1994. Santa Fe Pacific Gold, the company that owned the mine at that time, applied to the Mining and Minerals Division (MMD) for a release from the New Mexico Mining Act (NMMA) under the Prior Reclamation provision in Subpart 510. After conducting an inspection in September of 1995, MMD determined that the site could not be released at that time. Santa Fe Pacific Gold then applied for a variance in May 1996 to allow more time for their reclamation efforts to show results. MMD granted the variance on July 24, 1996 for a period up to 5 years. In early summer of 2000, MMD was contacted by Newmont Mining Company, who now owns the mine, to request an inspection by MMD for release of the site.

On August 16, 2000, Karen Garcia and Holland Shepherd of the Mining and Minerals Division met with Joe Pollara a representative from Newmont Mining Company to inspect and conduct vegetative surveys of the Poison Canyon Mine reclamation.

The site is located in Township 13N Range 9W Central portion of Section 19, about 15 miles north of Grants NM, (See attached map). The road going into the site disappears near a large arroyo at a fence line about ½ mile from the actual mine site. It appears that the roadbed had been built on top of an existing arroyo or drainage, and now has been washed away and severely eroded.

The mine was a combination open pit and underground operation. The adit and shafts were apparently covered, as we found no signs of their existence. We noted two main pit areas along with two overburden piles that had been reclaimed and seeded. We began by surveying the southern pit area.

## **Methodology and Results**

The methodology used to conduct the vegetative survey included using random numbers to pick a transect location in the reclaimed area. Then a random compass direction was

Poison Canyon  
Inspection Report  
August 2000

chosen to determine direction of transect. A 100 ft. tape was used to obtain percent relative cover data by identifying plant 'hits' every 2 ft. Five transects were run, four in the southern pit and one in the southwest pit area. The survey results are shown on the attached Vegetation Survey Results form. The statistical adequacy formula  $s^2t^2/(\bar{1}\bar{x})^2$  was used to ensure that an adequate number of transects had been conducted. In fact the variability was so low that 3 transects would have been adequate.

In order to determine if seeding efforts were successful MMD must measure against either a reference area or a technical standard agreed upon with the mine operator. In this case the Natural Resources Conservation Service, Range Site Description (RSD) Sandy (WP-2) was determined to be an appropriate standard. It was agreed that the percent cover value at the site must be at least 75% of the RSD for perennial grasses and forbs. The RSD contained a value of 18%, therefore, the site must have at least a 13.5% canopy cover of perennial grasses and forbs. The survey results indicate an average cover of 34%, well over the minimum value required. The cover values ranged from 32% up to 40% canopy cover. Indian rice grass dominated the dryer upper slopes with western wheat grass dominating the lower slightly wetter environments.

In addition, the site must contain a diversity of plant species indicative of a healthy and stable plant community. Again, referring to the RSD as a guide, the site should contain at least 2 cool season and 2 warm season grasses, as well at least one shrub and forb species. As can be seen in the vegetative survey results, the site does meet the diversity standard as well. Western Wheatgrass and Indian Rice grass being the cool season grasses and Blue Grama and Sideoats Grama representing warm season grasses.

Overall, the site contains a well established four-wing saltbush (*Atriplex spp.*) western wheatgrass (*Pascopyrum Smithii*)/ Blue Grama (*Bouteloua gracilis*) community. This is consistent with the natural vegetation composition in the surrounding undisturbed areas adjacent to the mine site. Though there is a small pocket of sunflower (*Heliantus spp.*), an undesirable annual forb, persisting in the pit bottom, indications are that the sunflower population has been receding and will continue to do so as it is replaced by more permanent perennial species.

### Erosion Control

The only area of concern that would inhibit classification as a site allowing for a self sustaining ecosystem would be the presence of a very deep (4 ft) erosion gully now encroaching into the reclamation area. The gully may have been caused by lack of erosion control and maintenance of an old roadbed that was built at the time the mine was active. The 1995 inspection report made mention of, "...a few erosion features including one that was significant". Since there has been no erosion control or maintenance of the site since the reclamation work in 1994, these erosion features are still present. The rills and small gullies noted on side slopes of the pit area will, in all likelihood, fill in and vegetate naturally. The large gully west of the pit, however, has the potential to continue headcutting up into the reclaimed area.

### **Recommendations**

The results of the vegetative survey clearly show that the site meets the cover and diversity standard agreed upon by MMD and the operator. Because the gully erosion at the site may compromise the stability of the reclamation, it is the recommendation of this inspector to have the operator take action to prevent the gully from causing further damage in the area. This could be accomplished by bringing in a dozer to riprap the sides and headcut portion of the gully. It would be of minimal cost and disturbance but would ensure that the largely successful reclamation efforts made in the past would not be negatively impacted. Once that is completed, it would be appropriate to release the site.

### **Attachments:**

Vegetative Survey Results  
Field Data Sheets  
NRCS Range Site Description



**Vegetative Survey Results**  
**Poison Canyon**  
**August 16, 2000**

**Summary**

	<b>Transect # 1</b>	<b>Transect # 2</b>	<b>Transect # 3</b>	<b>Transect #4</b>	<b>Transect # 5</b>
<b>Perennial grass/forbs</b>	32%	32%	40%	36%	30%
<b>Litter</b>	14%	2%	12%	12%	20%
<b>Bareground</b>	54%	64%	48%	40%	50%

**Key to Abbreviations Used in this Evaluation**

Rock = Rock with diameter > 2 inches

BG = Bare Ground

Litter = Plant Litter

Agsm = *Agropyron smithii*

Bogr = *Bouteloua gracilis*

Bocu = *Bouteloua curtipendula*

Atca = *Atriplex canescens*

Clse = *Cleome serrulata*

Orhy = *Oryzopsis hymenioides*

Hean = *Helianthus annus*

Pefo = unknown perennial forb

**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 1 of 5

Date: 8/16/00 Location: Bottom of South Pit Transect: 1 Degrees: 73

Line Length: 100 ft Investigators: Karen and Garcia and Holland Shepherd

1. BG	21. Litter	41. Bocu
2. Bogr	22. Litter	42. Bocu
3. BG	23. BG	43. BG
4. Orhy	24. Litter	44. Bocu
5. Atca	25. BG	45. BG
6. Bogr	26. BG	46. BG
7. BG	27. BG	47. BG
8. Bocu	28. BG	48. Litter
9. BG	29. Agsm	49. Bocu
10. BG	30. Agsm	50. Litter
11. BG	31. BG	
12. BG	32. Litter	
13. BG	33. Litter	
14. BG	34. BG	
15. BG	35. BG	
16. BG	36. BG	
17. Orhy	37. Atca	
18. Orhy	38. BG	
19. Orhy	39. BG	
20. Orhy	40. Bogr	

Total Rock % 0

Total Bare Ground % 54

Total Plant Cover % 32

Total Litter % 14

Perennial % 32 Annual % 0

**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 2 of 5

Date: 8/16/00 Location: Bottom of South Pit Transect: 2 Degrees: 163

Line Length: 100 ft Investigators: Karen Garcia and Holland Shepherd

1. BG	21. BG	41. BG
2. BG	22. BG	42. BG
3. Rock	23. BG	43. Pefo
4. BG	24. BG	44. BG
5. Bocu	25. BG	45. BG
6. BG	26. BG	46. Agsm
7. BG	27. Agsm	47. BG
8. BG	28. Orhy	48. BG
9. BG	29. Agsm	49. Litter
10. Orhy	30. Atca	50. BG
11. Orhy	31. Atca	
12. Bocu	32. BG	
13. Orhy	33. BG	
14. BG	34. BG	
15. Rock	35. BG	
16. Atca	36. BG	
17. Agsm	37. BG	
18. Atca	38. BG	
19. Atca	39. BG	
20. BG	40. BG	

Total Rock % 2

Total Bare Ground % 64

Total Plant Cover % 32

Total Litter % 2

Perennial % 32 Annual % 0

**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 3 of 5

Date: 8/16/00 Location: Bottom of South Pit Transect: 3 Degrees: 123

Line Length: 100 Investigators: Karen Garcia and Holland Shepherd

1. BG	21. BG	41. Clse
2. Atca	22. BG	42. BG
3. Litter	23. BG	43. BG
4. BG	24. BG	44. Clse
5. Litter	25. Atca	45. BG
6. Atca	26. Bogr	46. BG
7. BG	27. BG	47. BG
8. BG	28. BG	48. BG
9. BG	29. BG	49. Litter
10. Atca	30. Agsm	50. BG
11. BG	31. BG	
12. Bocu	32. Bocu	
13. BG	33. Atca	
14. Bogr	34. Atca	
15. Atca	35. Atca	
16. Litter	36. Agsm	
17. Orhy	37. Atca	
18. Litter	38. Atca	
19. BG	39. BG	
20. Litter	40. Agsm	

Total Rock % 0

Total Bare Ground % 48

Total Plant Cover % 40 Perennial % 40 Annual % 0

Total Litter % 12

**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 4 of 5

Date: 8/16/00 Location: Bottom of South Pit Transect: 4 Degrees: 140

Line Length: 100 Investigators: Karen Garcia and Holland Shepherd

1. BG	21. Agsm	41. Agsm
2. BG	22. Agsm	42. Litter
3. BG	23. Agsm	43. Litter
4. BG	24. BG	44. Agsm
5. BG	25. Agsm	45. BG
6. BG	26. Hean	46. Agsm
7. BG	27. Clse	47. Litter
8. Bogr	28. Hean	48. Litter
9. Bogr	29. Hean	49. BG
10. Litter	30. Hean	50. BG
11. Atca	31. BG	
12. BG	32. Hean	
13. BG	33. BG	
14. Litter	34. BG	
15. BG	35. BG	
16. Atca	36. BG	
17. Atca	37. Agsm	
18. Atca	38. BG	
19. Atca	39. Agsm	
20. Atca	40. BG	

Total Rock % 0

Total Bare Ground % 40

Total Plant Cover % 46

Total Litter % 12

Perennial % 36 Annual % 10

**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 5 of 5

Date: 8/16/00 Location: Bottom of Southwest Pit Transect: 5 Degrees: 241

Line Length: 100 ft Investigators: Karen Garcia and Holland Shepherd

1. Litter	21. Agsm	41. BG
2. BG	22. BG	42. BG
3. BG	23. BG	43. BG
4. Orhy	24. BG	44. BG
5. Litter	25. BG	45. BG
6. BG	26. Agsm	46. Orhy
7. BG	27. Litter	47. BG
8. BG	28. Litter	48. BG
9. BG	29. Litter	49. Bocu
10. BG	30. BG	50. Litter
11. Litter	31. Agsm	
12. BG	32. Agsm	
13. Litter	33. Agsm	
14. BG	34. BG	
15. BG	35. Agsm	
16. Agsm	36. Litter	
17. Agsm	37. Orhy	
18. BG	38. Orhy	
19. BG	39. Orhy	
20. BG	40. Orhy	

Total Rock % 0

Total Bare Ground % 50

Total Plant Cover % 30

Total Litter % 20

Perennial % 30 Annual %

Site Name Poison Canyon Data Sheet No. 1 of      Sec       
 Date 8/16/00 Location      Quadrant 1 Degrees 73° Twp       
 Line Length 100 ft Investigators Karen Holland Rng     

7/8 interval

1	BG	21	Litter	41	Boln	61	81
2	perennial gr.	22	Lit	42	Boln	62	82
3	BG	23	BG	43	BG	63	83
4	Orhy	24	Lit	44	Boln	64	84
5	Atcan	25	BG	45	BG	65	85
6	P. gr.	26	BG	46	BG	66	86
7	BG	27	BG	47	BG	67	87
8	Boln	28	BG	48	Lit	68	88
9	BG	29	AgSm	49	Boln	69	89
10	BG	30	AgSm	50	Lit	70	90
11	BG	31	BG	51		71	91
12	BG	32	Lit	52		72	92
13	BG	33	Lit	53		73	93
14	BG	34	BG	54		74	94
15	BG	35	BG	55		75	95
16	BG	36	BG	56		76	96
17	Orhy	37	Atca	57		77	97
18	PG	38	BG	58		78	98
19	Orhy	39	BG	59		79	99
20	Orhy	40	per gr.	60		80	100

Total Rock (R) %       
 Total Bare Ground (BG) % 54%  
 Total Plant Cover % 32% Perennial      Annual       
 Total Litter (L) %

Site Name Robin Canyon Data Sheet No. 2 of      Sec       
 Date 8/16/00 Location      Quadrant 2 Degrees 1650 Twp       
 Line Length 100 ft Investigators HJ JG Rng     

1	BG	21	BG	41	BG	61		81
2	BG	22	BG	42	BG	62		82
3	Rock	23	BG	43	<del>Atca</del> BG	63		83
4	BG	24	BG	44	BG	64		84
5	Bacu	25	BG	45	BG	65		85
6	BG	26	BG	46	Asm	66		86
7	BG	27	Asm	47	BG	67		87
8	Fl	28	Orhy	48	BG	68		88
9	BG	29	Asm	49	Litter	69		89
10	Orhy	30	Atca	50	BG	70		90
11	Orhy	31	Atca	51		71		91
12	Bacu	32	BG	52		72		92
13	Orhy	33	BG	53		73		93
14	BG	34	BG	54		74		94
15	Rock	35	BG	55		75		95
16	Atca	36	BG	56		76		96
17	Asm	37	BG	57		77		97
18	Atca	38	BG	58		78		98
19	Atca	39	BG	59		79		99
20	BG	40	BG	60		80		100

Total Rock (R) %       
 Total Bare Ground (BG) %       
 Total Plant Cover % 32 Perennial      Annual       
 Total Litter (L) %



Site Name Poison Canyon Data Sheet No. 3 of      Sec       
 Date 8/14 Location      Quadrant      Degrees 123 Twp       
 Line Length      Investigators      Rng     

<u>1</u>	BG	<u>21</u>	BG	<u>41</u>	Chome	<u>61</u>	<u>81</u>
<u>2</u>	Atca	<u>22</u>	BG	<u>42</u>	BG	<u>62</u>	<u>82</u>
<u>3</u>	Lit	<u>23</u>	BG	<u>43</u>	BG	<u>63</u>	<u>83</u>
<u>4</u>	BG	<u>24</u>	BG	<u>44</u>	Chome	<u>64</u>	<u>84</u>
<u>5</u>	Lit	<u>25</u>	Atca	<u>45</u>	BG	<u>65</u>	<u>85</u>
<u>6</u>	Atca	<u>26</u>	BoGr	<u>46</u>	BG	<u>66</u>	<u>86</u>
<u>7</u>	BG	<u>27</u>	BG	<u>47</u>	BG	<u>67</u>	<u>87</u>
<u>8</u>	BG	<u>28</u>	BG	<u>48</u>	BG	<u>68</u>	<u>88</u>
<u>9</u>	BG	<u>29</u>	BG	<u>49</u>	Lit	<u>69</u>	<u>89</u>
<u>10</u>	Atca	<u>30</u>	Atca	<u>50</u>	BG	<u>70</u>	<u>90</u>
<u>11</u>	BG	<u>31</u>	BG	<u>51</u>		<u>71</u>	<u>91</u>
<u>12</u>	BoGr	<u>32</u>	BoGr	<u>52</u>		<u>72</u>	<u>92</u>
<u>13</u>	BG	<u>33</u>	Atca	<u>53</u>		<u>73</u>	<u>93</u>
<u>14</u>	BoGr	<u>34</u>	Atca	<u>54</u>		<u>74</u>	<u>94</u>
<u>15</u>	Atca	<u>35</u>	Atca	<u>55</u>		<u>75</u>	<u>95</u>
<u>16</u>	Lit	<u>36</u>	AgSom	<u>56</u>		<u>76</u>	<u>96</u>
<u>17</u>	Orhy	<u>37</u>	Atca	<u>57</u>		<u>77</u>	<u>97</u>
<u>18</u>	Lit	<u>38</u>	Atca	<u>58</u>		<u>78</u>	<u>98</u>
<u>19</u>	BG	<u>39</u>	BG	<u>59</u>		<u>79</u>	<u>99</u>
<u>20</u>	Lit	<u>40</u>	AgSom	<u>60</u>		<u>80</u>	<u>100</u>

Total Rock (R) %       
 Total Bare Ground (BG) %       
 Total Plant Cover % 40 Perennial      Annual       
 Total Litter (L) %

Site Name Poison Canyon Data Sheet No. 4 of      Sec       
 Date 8/1 Location      Quadrant 4 Degrees      Twp       
 Line Length 100 ft Investigators K.G. & H.S. Rng     

1	BG	21	Asm	41	Asm	61	81
2	BG	22	Asm	42	Litter	62	82
3	BG	23	Asm	43	Litter	63	83
4	BG	24	BG	44	Asm	64	84
5	BG	25	Asm	45	BG	65	85
6	BG	26	Hean	46	Asm	66	86
7	BG	27	Querc	47	Litter	67	87
8	Boar	28	Hean	48	Litter	68	88
9	Boar	29	Hean	49	BG	69	89
10	Litter	30	Hean	50	BG	70	90
11	Atca	31	BG	51		71	91
12	BG	32	Hean	52		72	92
13	BG	33	BG	53		73	93
14	Litter	34	BG	54		74	94
15	BG	35	BG	55		75	95
16	Atca	36	BG	56		76	96
17	Atca	37	Asm	57		77	97
18	Atca	38	BG	58		78	98
19	Atca	39	Asm	59		79	99
20	Atca	40	BG	60		80	100

Total Rock (R) %       
 Total Bare Ground (BG) %       
 Total Plant Cover % 46% Perennial 36% Annual 10%  
 Total Litter (L) %

Site Name POISON Canyon Data Sheet No. 5 of      Sec       
 Date 8/1 Location      Quadrant 5 Degrees 241° Twp       
 Line Length      Investigators      Rng     

<u>1</u>	Lit	<u>21</u>	AgSom	<u>41</u>	BG	<u>61</u>	<u>81</u>
<u>2</u>	BG	<u>22</u>	BG	<u>42</u>	BG	<u>62</u>	<u>82</u>
<u>3</u>	BG	<u>23</u>	BG	<u>43</u>	BG	<u>63</u>	<u>83</u>
<u>4</u>	Orhy	<u>24</u>	BG	<u>44</u>	BG	<u>64</u>	<u>84</u>
<u>5</u>	Lit	<u>25</u>	BG	<u>45</u>	BG	<u>65</u>	<u>85</u>
<u>6</u>	BG	<u>26</u>	AgSom	<u>46</u>	Orhy	<u>66</u>	<u>86</u>
<u>7</u>	BG	<u>27</u>	Lit	<u>47</u>	BG	<u>67</u>	<u>87</u>
<u>8</u>	BG	<u>28</u>	Lit	<u>48</u>	BG	<u>68</u>	<u>88</u>
<u>9</u>	BG	<u>29</u>	Lit	<u>49</u>	Bolli	<u>69</u>	<u>89</u>
<u>10</u>	BG	<u>30</u>	BG	<u>50</u>	Lit	<u>70</u>	<u>90</u>
<u>11</u>	Lit	<u>31</u>	AgSom	<u>51</u>		<u>71</u>	<u>91</u>
<u>12</u>	BG	<u>32</u>	AgSom	<u>52</u>		<u>72</u>	<u>92</u>
<u>13</u>	Lit	<u>33</u>	AgSom	<u>53</u>		<u>73</u>	<u>93</u>
<u>14</u>	BG	<u>34</u>	BG	<u>54</u>		<u>74</u>	<u>94</u>
<u>15</u>	BG	<u>35</u>	AgSom	<u>55</u>		<u>75</u>	<u>95</u>
<u>16</u>	AgSom	<u>36</u>	Lit	<u>56</u>		<u>76</u>	<u>96</u>
<u>17</u>	AgSom	<u>37</u>	Orhy	<u>57</u>		<u>77</u>	<u>97</u>
<u>18</u>	BG	<u>38</u>	Orhy	<u>58</u>		<u>78</u>	<u>98</u>
<u>19</u>	BG	<u>39</u>	Orhy	<u>59</u>		<u>79</u>	<u>99</u>
<u>20</u>	BG	<u>40</u>	Orhy	<u>60</u>		<u>80</u>	<u>100</u>

Total Rock (R) %       
 Total Bare Ground (BG) %       
 Total Plant Cover % 30 Perennial      Annual       
 Total Litter (L) %

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## RANGE SITE DESCRIPTION

## Section II E, Technical Guide

A. SITE NO. D36-113-N

Sandy (WP-2)

## B. PHYSIOGRAPHIC FEATURES

This site usually occurs on level to gently sloping or undulating topography of upland plains. Slopes average less than 10 percent. Elevations range from about 6,000 feet to just over 7,200 feet.

## C. CLIMATIC FEATURES

1. Average annual precipitation varies from about 10 inches to just over 16 inches. Fluctuations ranging from about 5 inches to 25 inches are not uncommon. The overall climate is characterized by cold dry winters in which winter moisture is less than summer. As much as half or more of the annual precipitation can be expected to come during the period of July through September. Thus, fall conditions are often more favorable for good growth of cool-season perennial grasses, shrubs, and forbs than are those of spring.

2. The average frost-free season is about 120 days and extends from approximately mid-May to early or mid-September. Average annual air temperatures are 50° F. or lower, and summer maximums rarely exceed 100° F. Winter minimums typically approach or go below zero. Monthly mean temperatures exceed 70° F. for the period of July and August.

3. Rainfall patterns generally favor warm-season perennial vegetation, while the temperature regime tends to favor cool-season vegetation. This creates a somewhat complex community of plants on a given range site which is quite susceptible to disturbance and is at or near its productive potential only when both the natural warm- and cool-season dominants are present.

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## D. SOILS

1. The soils of this site are moderately deep to deep, well drained, and may or may not be calcareous throughout. Typically, the surface layer is a sandy loam, fine sandy loam, or loamy fine sand at least 5 or 6 inches thick over sandy loam to clay loam subsoils. Permeability is moderately slow to moderately rapid, and the available water capacity is moderate to high.

The soils of this site are subject to soil blowing.

## 2. Characteristic soils are:

Telescope loamy fine sand

## 3. Other soils included are:

Royosa fine sand

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## E. POTENTIAL NATURAL PLANT COMMUNITY

1. This site is characterized by both warm- and cool-season grasses, scattered shrubs, half-shrubs, and forbs. Blue grama and western wheatgrass are co-dominants, with Indian ricegrass and dropseed closely associated. Principal shrubs and half-shrubs include fourwing saltbush, winterfat, and sand sagebrush. Rocky Mountain beeplant is often the most noticeable forb. Broom snakeweed is most common in certain wet years and when the plant community deteriorates from its potential.

2. Composition of Potential Plant Community

Approximate percentage of total annual herbage production.

Grasses and Grasslike - 75-85%		(Shrubs, half-shrubs, vines and trees)		Forbs - 5-10%	
Western wheatgrass	15-20	Woody - 10-15%		Perennials	3-8
Blue grama	25-30	Fourwing saltbush)	5-10	Annuals	1-5
Indian ricegrass	5-10	Winterfat )			
Needleandthread )		Bigelow sagebrush	1-5		
Bottlebrush squirreltail)	5-10	Broom snakeweed )			
New Mexico feathergrass )		Rabbitbrush )	1-3		
Sand dropseed )		Sand sagebrush )			
Spike dropseed )	10-15	Spineless horsebrush)			
Galleta	1-5				
Ring muhly )					
Sandhill muhly )	3-5				
False buffalograss )					
Threeawns spp. )	1-5				
Black grama	1-5				
Spike muhly	1-3				

3. Canopy Cover

Shrubs and half-shrubs - 5% @ 75% → 3.75%

4. Ground Cover (Average Percent of Surface Area)

Grasses, grasslike, forbs	18	@ 75% → 13.5%
Bare ground	69	
Surface gravel	1	
Surface cobble and stones	0	
Litter - percent of area	12	
av. depth in cm.	2	

## F. TOTAL ANNUAL HERBAGE PRODUCTION (Air-dry, lbs./ac.)

Favorable years - 850 (Average)

Unfavorable years - 325 (Average) 244 - 638 1/4 ac.

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## G. SITE INTERPRETATIONS

### 1. Grazing

This site is suitable for grazing by most kinds and classes of livestock in all seasons of the year but is poorly suited for continuous year-long grazing if potential natural vegetation is to be maintained. Under such use, cool-season grasses, such as western wheatgrass, Indian ricegrass, and needleandthread, may decline or even disappear. If use is heavy and prolonged, many of the more palatable warm-season species will also decline. The site in a typically deteriorated condition may be characterized by low-vigor, sod-like blue grama and possibly some galleta. Further deterioration is characterized by increasing amounts of bare ground, increases in ring muhly, sandhill muhly, threeawns and rabbitbrush, and by certain annual forbs. Production in these instances may be cut to one-third or less of the potential, and soil blowing may become severe. The site, in certain instances, is subject to invasion by woody species such as pinyon pine and juniper.

### 2. Wood Products

This site has no significant value for wood products.

### 3. Habitat for Wildlife

This range site provides habitat which supports a resident animal community that is characterized by pronghorn antelope, kit fox, badger, desert cottontail, spotted ground squirrel, Ord's kangaroo rat, white-throated woodrat, Botta's pocket gopher, plains pocket mouse, Northern grasshopper mouse, ferruginous hawk, mourning dove, meadowlark, plains spadefoot toad, Eastern fence lizard, plateau whiptail, short-horned lizard and prairie rattlesnake.

Common raven and prairie falcon hunt over the site.

### 4. Hydrologic Interpretations

#### Soil Series

#### Hydrologic Groups

Telescope

B

Royosa fine sand

A

Runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

USDA SCS NM MLRA 36-113-N

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5. Recreation and Natural Beauty

This site offers fair potential for hiking, horseback riding, nature observation, photography, camping, and picnicking. It offers good to excellent potential for hunting of pronghorn antelope.

In years of favorable moisture, colorful wildflowers dot the landscape.

6. Endangered Plants and Animals

To be added as reliable information becomes available.

## H. OTHER PERTINENT INFORMATION

1. Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

<u>Range Condition</u>	<u>Ac/Aum</u>
Excellent (100-76)	3.6-4.7
Good (75-51)	4.5-7.0
Fair (50-25)	6.8-12.0
Poor (25-0)	12.0+

2. Relative Quality of Plants for Animal Use 1/

## (a) Cattle

<u>Primary</u>	<u>Secondary</u>	<u>Low Value</u>
Western wheatgrass	Blue grama	Broom snakeweed
Indian ricegrass	Galleta	Rabbitbrush
Needleandthread	Bigelow sagebrush	Spineless horsebrush
New Mexico feathergrass	Sand dropseed	Sandhill muhly
Winterfat	Threeawns spp.	Ring muhly
Fourwing saltbush	Most perennial forbs	False buffalograss
Black grama		
Bottlebrush squirreltail		

## (b) Antelope and Sheep

<u>Primary</u>	<u>Secondary</u>	<u>Low Value</u>
Winterfat	Blue grama	Broom snakeweed
Bigelow sagebrush	New Mexico feathergrass	Rabbitbrush
Western wheatgrass	Needleandthread	Sand sagebrush
Indian ricegrass	Threeawns spp.	Sandhill muhly
Fourwing saltbush	Dropseeds	Spineless horsebrush
Most perennial forbs		



FROM : NRCS GRANTS FO

PHONE NO. : 505 287 7049

Aug. 14 2000 03:40PM P6

## I. IDENTIFICATION AND AUTHORIZATION

1. USDA SCS  
Albuquerque, NM  
MLRA 36
2. Field Offices:  
Reserve  
Magdalena/Quemado
3. Field Office Sample Location

## 4. Approved:

*D. J. S. S. S.* *2/15/80*  
State Range Conservationist Date

*Durwood E. Ball* *3/27/80*  
WTSC Range Conservationist Date

USDA, SCS, NM MLRA 36-113-N

6

January 1980

T-020 P.015/016 F-045

AUG-15-00 12:58PM FROM-

US-NAUM0175193

US-NAUM0175124-00070

## Legend and Definitions for Range Site Descriptions.

- 1/ This rating system provides general guidance as to animal preference for plant species. It also indicates possible competition between kinds of animals for the various plants. Grazing preference changes from time to time and place to place, depending upon the animals, upon plant palatability and nutritive value, stage of growth and season of use, relative abundance, and associated plants. Grazing preference does not necessarily reflect a plant's ecological place in the climax plant community.

The following definitions apply to cattle, sheep, goats, deer, and antelope grazing:

Primary: These species generally decrease when the climax plant community is subjected to continuous heavy grazing pressure by the animals listed. These species are normally grazed first and preferred by the designated grazing animals when given free choice.

Secondary: These plants usually increase initially, then decrease when the site is subjected to continuous heavy grazing use by the animals listed. These plants are normally grazed after primary plants become scarce under free choice, or along with them under intensive grazing systems.

Low Value: These plants continue to increase with heavy, continuous grazing use of the site. These plants are not normally grazed until primary and secondary species are gone and animals are forced to eat them.

# **Poison Canyon Inspection Report**

**Date of Inspection:**

August 16, 2000

**Present during inspection:**

MMD representatives: Karen Garcia, Holland Shepherd,  
Newmont Mining Co. representatives: Joe Pollara

**Background**

Reclamation at the Poison Canyon Mine site occurred during the spring of 1994. Santa Fe Pacific Gold, the company that owned the mine at that time, applied to the Mining and Minerals Division (MMD) for a release from the New Mexico Mining Act (NMMA) under the Prior Reclamation provision in Subpart 510. After conducting an inspection in September of 1995, MMD determined that the site could not be released at that time. Santa Fe Pacific Gold then applied for a variance in May 1996 to allow more time for their reclamation efforts to show results. MMD granted the variance on July 24, 1996 for a period up to 5 years. In early summer of 2000, MMD was contacted by Newmont Mining Company, who now owns the mine, to request an inspection by MMD for release of the site.

On August 16, 2000, Karen Garcia and Holland Shepherd of the Mining and Minerals Division met with Joe Pollara a representative from Newmont Mining Company to inspect and conduct vegetative surveys of the Poison Canyon Mine reclamation.

The site is located in Township 13N Range 9W Central portion of Section 19, about 15 miles north of Grants NM, (See attached map). The road going into the site disappears near a large arroyo at a fence line about ½ mile from the actual mine site. It appears that the roadbed had been built on top of an existing arroyo or drainage, and now has been washed away and severely eroded.

The mine was a combination open pit and underground operation. The adit and shafts were apparently covered, as we found no signs of their existence. We noted two main pit areas along with two overburden piles that had been reclaimed and seeded. We began by surveying the southern pit area.

**Methodology and Results**

The methodology used to conduct the vegetative survey included using random numbers to pick a transect location in the reclaimed area. Then a random compass direction was

Poison Canyon  
Inspection Report  
August 2000

chosen to determine direction of transect. A 100 ft. tape was used to obtain percent relative cover data by identifying plant 'hits' every 2 ft. Five transects were run, four in the southern pit and one in the southwest pit area. The survey results are shown on the attached Vegetation Survey Results form. The statistical adequacy formula  $s^2t^2/(.1x)^2$  was used to ensure that an adequate number of transects had been conducted. In fact the variability was so low that 3 transects would have been adequate.

In order to determine if seeding efforts were successful MMD must measure against either a reference area or a technical standard agreed upon with the mine operator. In this case the Natural Resources Conservation Service, Range Site Description (RSD) Sandy (WP-2) was determined to be an appropriate standard. It was agreed that the percent cover value at the site must be at least 75% of the RSD for perennial grasses and forbs. The RSD contained a value of 18%, therefore, the site must have at least a 13.5% canopy cover of perennial grasses and forbs. The survey results indicate an average cover of 34%, well over the minimum value required. The cover values ranged from 32% up to 40% canopy cover. Indian rice grass dominated the dryer upper slopes with western wheat grass dominating the lower slightly wetter environments.

In addition, the site must contain a diversity of plant species indicative of a healthy and stable plant community. Again, referring to the RSD as a guide, the site should contain at least 2 cool season and 2 warm season grasses, as well at least one shrub and forb species. As can be seen in the vegetative survey results, the site does meet the diversity standard as well. Western Wheatgrass and Indian Rice grass being the cool season grasses and Blue Grama and Sideoats Grama representing warm season grasses.

Overall, the site contains a well established four-wing saltbush (*Atriplex spp.*) western wheatgrass (*Pascopyrum Smithii*)/ Blue Grama (*Bouteloua gracilis*) community. This is consistent with the natural vegetation composition in the surrounding undisturbed areas adjacent to the mine site. Though there is a small pocket of sunflower (*Heliantus spp.*), an undesirable annual forb, persisting in the pit bottom, indications are that the sunflower population has been receding and will continue to do so as it is replaced by more permanent perennial species.

### **Erosion Control**

The only area of concern that would inhibit classification as a site allowing for a self sustaining ecosystem would be the presence of a very deep (4 ft) erosion gully now encroaching into the reclamation area. The gully may have been caused by lack of erosion control and maintenance of an old roadbed that was built at the time the mine was active. The 1995 inspection report made mention of, "...a few erosion features including one that was significant". Since there has been no erosion control or maintenance of the site since the reclamation work in 1994, these erosion features are still present. The rills and small gullies noted on side slopes of the pit area will, in all likelihood, fill in and vegetate naturally. The large gully west of the pit, however, has the potential to continue headcutting up into the reclaimed area.

### **Recommendations**

The results of the vegetative survey clearly show that the site meets the cover and diversity standard agreed upon by MMD and the operator. Because the gully erosion at the site may compromise the stability of the reclamation, it is the recommendation of this inspector to have the operator take action to prevent the gully from causing further damage in the area. This could be accomplished by bringing in a dozer to riprap the sides and headcut portion of the gully. It would be of minimal cost and disturbance but would ensure that the largely successful reclamation efforts made in the past would not be negatively impacted. Once that is completed, the site could be released.

### **Attachments:**

Vegetative Survey Results  
Field Data Sheets  
NRCS Range Site Description

**Vegetative Survey Results  
Poison Canyon  
August 16, 2000**

**Summary**

	<b>Transect # 1</b>	<b>Transect # 2</b>	<b>Transect # 3</b>	<b>Transect #4</b>	<b>Transect # 5</b>
<b>Perennial grass/forbs</b>	32%	32%	40%	36%	30%
<b>Litter</b>	14%	2%	12%	12%	20%
<b>Bareground</b>	54%	64%	48%	40%	50%

**Key to Abbreviations Used in this Evaluation**

Rock = Rock with diameter > 2 inches

BG = Bare Ground

Litter = Plant Litter

Agsm = Agropyron smithii

Bogr = Bouteloua gracilis

Bocu = Bouteloua curtipendula

Atca = Atriplex canescens

Clse = Cleome serrulata

Orhy = Oryzopsis hymenoides

Hean = Helianthus annuus

Pefo = unknown perennial forb

**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 1 of 5

Date: 8/16/00 Location: Bottom of South Pit Transect: 1 Degrees: 73

Line Length: 100 ft Investigators: Karen and Garcia and Holland Shepherd

1. BG	21. Litter	41. Bocu
2. Bogr	22. Litter	42. Bocu
3. BG	23. BG	43. BG
4. Orhy	24. Litter	44. Bocu
5. Atca	25. BG	45. BG
6. Bogr	26. BG	46. BG
7. BG	27. BG	47. BG
8. Bocu	28. BG	48. Litter
9. BG	29. Agsm	49. Bocu
10. BG	30. Agsm	50. Litter
11. BG	31. BG	
12. BG	32. Litter	
13. BG	33. Litter	
14. BG	34. BG	
15. BG	35. BG	
16. BG	36. BG	
17. Orhy	37. Atca	
18. Orhy	38. BG	
19. Orhy	39. BG	
20. Orhy	40. Bogr	

Total Rock % 0

Total Bare Ground % 54

Total Plant Cover % 32

Total Litter % 14

Perennial % 32 Annual % 0

**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 2 of 5

Date: 8/16/00 Location: Bottom of South Pit Transect: 2 Degrees: 163

Line Length: 100 ft Investigators: Karen Garcia and Holland Shepherd

1. BG	21. BG	41. BG
2. BG	22. BG	42. BG
3. Rock	23. BG	43. Pefo
4. BG	24. BG	44. BG
5. Bocu	25. BG	45. BG
6. BG	26. BG	46. Agsm
7. BG	27. Agsm	47. BG
8. BG	28. Orhy	48. BG
9. BG	29. Agsm	49. Litter
10. Orhy	30. Atca	50. BG
11. Orhy	31. Atca	
12. Bocu	32. BG	
13. Orhy	33. BG	
14. BG	34. BG	
15. Rock	35. BG	
16. Atca	36. BG	
17. Agsm	37. BG	
18. Atca	38. BG	
19. Atca	39. BG	
20. BG	40. BG	

Total Rock % 2

Total Bare Ground % 64

Total Plant Cover % 32

Total Litter % 2

Perennial % 32 Annual % 0



**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 3 of 5

Date: 8/16/00 Location: Bottom of South Pit Transect: 3 Degrees: 123

Line Length: 100 Investigators: Karen Garcia and Holland Shepherd

1. BG	21. BG	41. Clse
2. Atca	22. BG	42. BG
3. Litter	23. BG	43. BG
4. BG	24. BG	44. Clse
5. Litter	25. Atca	45. BG
6. Atca	26. Bogr	46. BG
7. BG	27. BG	47. BG
8. BG	28. BG	48. BG
9. BG	29. BG	49. Litter
10. Atca	30. Agsm	50. BG
11. BG	31. BG	
12. Bocu	32. Bocu	
13. BG	33. Atca	
14. Bogr	34. Atca	
15. Atca	35. Atca	
16. Litter	36. Agsm	
17. Orhy	37. Atca	
18. Litter	38. Atca	
19. BG	39. BG	
20. Litter	40. Agsm	

Total Rock % 0

Total Bare Ground % 48

Total Plant Cover % 40 Perennial % 40 Annual % 0

Total Litter % 12

**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 4 of 5

Date: 8/16/00 Location: Bottom of South Pit Transect: 4 Degrees: 140

Line Length: 100 Investigators: Karen Garcia and Holland Shepherd

1. BG	21. Agsm	41. Agsm
2. BG	22. Agsm	42. Litter
3. BG	23. Agsm	43. Litter
4. BG	24. BG	44. Agsm
5. BG	25. Agsm	45. BG
6. BG	26. Hean	46. Agsm
7. BG	27. Clse	47. Litter
8. Bogr	28. Hean	48. Litter
9. Bogr	29. Hean	49. BG
10. Litter	30. Hean	50. BG
11. Atca	31. BG	
12. BG	32. Hean	
13. BG	33. BG	
14. Litter	34. BG	
15. BG	35. BG	
16. Atca	36. BG	
17. Atca	37. Agsm	
18. Atca	38. BG	
19. Atca	39. Agsm	
20. Atca	40. BG	

Total Rock % 0

Total Bare Ground % 40

Total Plant Cover % 46

Total Litter % 12

Perennial % 36 Annual % 10

**Mining and Minerals Division  
Vegetation Data Collection Form**

Site Name: Poison Canyon Mine Data Sheet No. 5 of 5

Date: 8/16/00 Location: Bottom of Southwest Pit Transect: 5 Degrees: 241

Line Length: 100 ft Investigators: Karen Garcia and Holland Shepherd

1. Litter	21. Agsm	41. BG
2. BG	22. BG	42. BG
3. BG	23. BG	43. BG
4. Orhy	24. BG	44. BG
5. Litter	25. BG	45. BG
6. BG	26. Agsm	46. Orhy
7. BG	27. Litter	47. BG
8. BG	28. Litter	48. BG
9. BG	29. Litter	49. Bocu
10. BG	30. BG	50. Litter
11. Litter	31. Agsm	
12. BG	32. Agsm	
13. Litter	33. Agsm	
14. BG	34. BG	
15. BG	35. Agsm	
16. Agsm	36. Litter	
17. Agsm	37. Orhy	
18. BG	38. Orhy	
19. BG	39. Orhy	
20. BG	40. Orhy	

Total Rock % 0

Total Bare Ground % 50

Total Plant Cover % 30

Total Litter % 20

Perennial % 30 Annual %

Site Name Poison Canyon Data Sheet No. 1 of        Sec         
 Date 8/16/00 Location        Quadrant 1 Degrees 73° Twp         
 Line Length 100 ft Investigators Karen Holland Rng       

2 ft interval

<u>1</u> BG	<u>21</u> Litter	<u>41</u> Bolu	<u>61</u>	<u>81</u>
<u>2</u> personal gr.	<u>22</u> Lit	<u>42</u> Bolu	<u>62</u>	<u>82</u>
<u>3</u> BG	<u>23</u> BG	<u>43</u> BG	<u>63</u>	<u>83</u>
<u>4</u> Orhy	<u>24</u> Lit	<u>44</u> Bolu	<u>64</u>	<u>84</u>
<u>5</u> Atcan	<u>25</u> BG	<u>45</u> BG	<u>65</u>	<u>85</u>
<u>6</u> p. gr.	<u>26</u> BG	<u>46</u> BG	<u>66</u>	<u>86</u>
<u>7</u> BG	<u>27</u> BG	<u>47</u> BG	<u>67</u>	<u>87</u>
<u>8</u> Bolu	<u>28</u> BG	<u>48</u> Lit	<u>68</u>	<u>88</u>
<u>9</u> BG	<u>29</u> AgSm	<u>49</u> Bolu	<u>69</u>	<u>89</u>
<u>10</u> BG	<u>30</u> AgSm	<u>50</u> Lit	<u>70</u>	<u>90</u>
<u>11</u> BG	<u>31</u> BG	<u>51</u>	<u>71</u>	<u>91</u>
<u>12</u> BG	<u>32</u> Lit	<u>52</u>	<u>72</u>	<u>92</u>
<u>13</u> BG	<u>33</u> Lit	<u>53</u>	<u>73</u>	<u>93</u>
<u>14</u> BG	<u>34</u> BG	<u>54</u>	<u>74</u>	<u>94</u>
<u>15</u> BG	<u>35</u> BG	<u>55</u>	<u>75</u>	<u>95</u>
<u>16</u> BG	<u>36</u> BG	<u>56</u>	<u>76</u>	<u>96</u>
<u>17</u> Orhy	<u>37</u> AtCa	<u>57</u>	<u>77</u>	<u>97</u>
<u>18</u> BG	<u>38</u> BG	<u>58</u>	<u>78</u>	<u>98</u>
<u>19</u> Orhy	<u>39</u> BG	<u>59</u>	<u>79</u>	<u>99</u>
<u>20</u> Orhy	<u>40</u> per gr.	<u>60</u>	<u>80</u>	<u>100</u>

Total Rock (R) %         
 Total Bare Ground (BG) % 54%  
 Total Plant Cover % 32% Perennial        Annual         
 Total Litter (L) %

Site Name Boston Canyon Data Sheet No. 2 of        Sec         
 Date 8/16/00 Location        Quadrant 2 Degrees N 50 Twp         
 Line Length 100 ft Investigators HS, BG Rng       

<u>1</u>	BG	<u>21</u>	BG	<u>41</u>	BG	<u>61</u>		<u>81</u>
<u>2</u>	BG	<u>22</u>	BG	<u>42</u>	BG	<u>62</u>		<u>82</u>
<u>3</u>	Rock	<u>23</u>	BG	<u>43</u>	<del>Atca</del> Refo	<u>63</u>		<u>83</u>
<u>4</u>	BG	<u>24</u>	BG	<u>44</u>	BG	<u>64</u>		<u>84</u>
<u>5</u>	Bacu	<u>25</u>	BG	<u>45</u>	BG	<u>65</u>		<u>85</u>
<u>6</u>	BG	<u>26</u>	BG	<u>46</u>	Asym	<u>66</u>		<u>86</u>
<u>7</u>	BG	<u>27</u>	Asym	<u>47</u>	BG	<u>67</u>		<u>87</u>
<u>8</u>	Rc	<u>28</u>	Orhy	<u>48</u>	BG	<u>68</u>		<u>88</u>
<u>9</u>	BG	<u>29</u>	Asym	<u>49</u>	Litter	<u>69</u>		<u>89</u>
<u>10</u>	Orhy	<u>30</u>	Atca	<u>50</u>	BG	<u>70</u>		<u>90</u>
<u>11</u>	Orhy	<u>31</u>	Atca	<u>51</u>		<u>71</u>		<u>91</u>
<u>12</u>	Bacu	<u>32</u>	BG	<u>52</u>		<u>72</u>		<u>92</u>
<u>13</u>	Orhy	<u>33</u>	BG	<u>53</u>		<u>73</u>		<u>93</u>
<u>14</u>	BG	<u>34</u>	BG	<u>54</u>		<u>74</u>		<u>94</u>
<u>15</u>	Rock	<u>35</u>	BG	<u>55</u>		<u>75</u>		<u>95</u>
<u>16</u>	Atca	<u>36</u>	BG	<u>56</u>		<u>76</u>		<u>96</u>
<u>17</u>	Asym	<u>37</u>	BG	<u>57</u>		<u>77</u>		<u>97</u>
<u>18</u>	Atca	<u>38</u>	BG	<u>58</u>		<u>78</u>		<u>98</u>
<u>19</u>	Atca	<u>39</u>	BG	<u>59</u>		<u>79</u>		<u>99</u>
<u>20</u>	BG	<u>40</u>	BG	<u>60</u>		<u>80</u>		<u>100</u>

Total Rock (R) %         
 Total Bare Ground (BG) %         
 Total Plant Cover % 32 Perennial        Annual         
 Total Litter (L) %

Site Name Poison Canyon Data Sheet No. 3 of      Sec       
 Date 8/14 Location      Quadrant      Degrees 123 Twp       
 Line Length      Investigators      Rng     

<u>1</u>	BG	<u>21</u>	BG	<u>41</u>	Chome	<u>61</u>		<u>81</u>
<u>2</u>	AtCa	<u>22</u>	BG	<u>42</u>	BG	<u>62</u>		<u>82</u>
<u>3</u>	Lit	<u>23</u>	BG	<u>43</u>	BG	<u>63</u>		<u>83</u>
<u>4</u>	BG	<u>24</u>	BG	<u>44</u>	Chome	<u>64</u>		<u>84</u>
<u>5</u>	Lit	<u>25</u>	AtCa	<u>45</u>	BG	<u>65</u>		<u>85</u>
<u>6</u>	AtCa	<u>26</u>	BoGr	<u>46</u>	BG	<u>66</u>		<u>86</u>
<u>7</u>	BG	<u>27</u>	BG	<u>47</u>	BG	<u>67</u>		<u>87</u>
<u>8</u>	BG	<u>28</u>	BG	<u>48</u>	BG	<u>68</u>		<u>88</u>
<u>9</u>	BG	<u>29</u>	BG	<u>49</u>	Lit	<u>69</u>		<u>89</u>
<u>10</u>	AtCa	<u>30</u>	AgSm	<u>50</u>	BG	<u>70</u>		<u>90</u>
<u>11</u>	BG	<u>31</u>	BG	<u>51</u>		<u>71</u>		<u>91</u>
<u>12</u>	BoCu	<u>32</u>	BoCu	<u>52</u>		<u>72</u>		<u>92</u>
<u>13</u>	BG	<u>33</u>	AtCa	<u>53</u>		<u>73</u>		<u>93</u>
<u>14</u>	BoGr	<u>34</u>	AtCa	<u>54</u>		<u>74</u>		<u>94</u>
<u>15</u>	AtCa	<u>35</u>	AtCa	<u>55</u>		<u>75</u>		<u>95</u>
<u>16</u>	Lit	<u>36</u>	AgSm	<u>56</u>		<u>76</u>		<u>96</u>
<u>17</u>	Orhy	<u>37</u>	AtCa	<u>57</u>		<u>77</u>		<u>97</u>
<u>18</u>	Lit	<u>38</u>	AtCa	<u>58</u>		<u>78</u>		<u>98</u>
<u>19</u>	BG	<u>39</u>	BG	<u>59</u>		<u>79</u>		<u>99</u>
<u>20</u>	LIT	<u>40</u>	AgSm	<u>60</u>		<u>80</u>		<u>100</u>

Total Rock (R) %       
 Total Bare Ground (BG)%       
 Total Plant Cover % 40 Perennial      Annual       
 Total Litter (L)%

Site Name Poison Canyon Data Sheet No. 4 of      Sec       
 Date 8/16 Location 100 ft Quadrant 4 Degrees      Twp       
 Line Length      Investigators HG & HS Rng     

<u>1</u>	BG	<u>21</u>	Agsm	<u>41</u>	Agsm	<u>61</u>	<u>81</u>
<u>2</u>	BG	<u>22</u>	Agsm	<u>42</u>	Litter	<u>62</u>	<u>82</u>
<u>3</u>	BG	<u>23</u>	Agsm	<u>43</u>	Litter	<u>63</u>	<u>83</u>
<u>4</u>	BG	<u>24</u>	BG	<u>44</u>	Agsm	<u>64</u>	<u>84</u>
<u>5</u>	BG	<u>25</u>	Agsm	<u>45</u>	BG	<u>65</u>	<u>85</u>
<u>6</u>	BG	<u>26</u>	Hean	<u>46</u>	Agsm	<u>66</u>	<u>86</u>
<u>7</u>	BG	<u>27</u>	Cesme	<u>47</u>	Litter	<u>67</u>	<u>87</u>
<u>8</u>	Bear	<u>28</u>	Hean	<u>48</u>	Litter	<u>68</u>	<u>88</u>
<u>9</u>	Bear	<u>29</u>	Hean	<u>49</u>	BG	<u>69</u>	<u>89</u>
<u>10</u>	Litter	<u>30</u>	Hean	<u>50</u>	BG	<u>70</u>	<u>90</u>
<u>11</u>	Atca	<u>31</u>	BG	<u>51</u>		<u>71</u>	<u>91</u>
<u>12</u>	BG	<u>32</u>	Hean	<u>52</u>		<u>72</u>	<u>92</u>
<u>13</u>	BG	<u>33</u>	BG	<u>53</u>		<u>73</u>	<u>93</u>
<u>14</u>	Litter	<u>34</u>	BG	<u>54</u>		<u>74</u>	<u>94</u>
<u>15</u>	BG	<u>35</u>	BG	<u>55</u>		<u>75</u>	<u>95</u>
<u>16</u>	Atca	<u>36</u>	BG	<u>56</u>		<u>76</u>	<u>96</u>
<u>17</u>	Atca	<u>37</u>	Agsm	<u>57</u>		<u>77</u>	<u>97</u>
<u>18</u>	Atca	<u>38</u>	BG	<u>58</u>		<u>78</u>	<u>98</u>
<u>19</u>	Atca	<u>39</u>	Agsm	<u>59</u>		<u>79</u>	<u>99</u>
<u>20</u>	Atca	<u>40</u>	BG	<u>60</u>		<u>80</u>	<u>100</u>

Total Rock (R) %       
 Total Bare Ground (BG) %       
 Total Plant Cover % 46% Perennial 36% Annual 10%  
 Total Litter (L) %

Site Name POISON Canyon Data Sheet No. 5 of      Sec       
 Date 8/6 Location      Quadrant 5 Degrees 241 Twp       
 Line Length      Investigators      Rng     

<u>1</u>	Lit	<u>21</u>	AgSom	<u>41</u>	BG	<u>61</u>	<u>81</u>
<u>2</u>	BG	<u>22</u>	BG	<u>42</u>	BG	<u>62</u>	<u>82</u>
<u>3</u>	BG	<u>23</u>	BG	<u>43</u>	BG	<u>63</u>	<u>83</u>
<u>4</u>	Orhy	<u>24</u>	BG	<u>44</u>	BG	<u>64</u>	<u>84</u>
<u>5</u>	Lit	<u>25</u>	BG	<u>45</u>	BG	<u>65</u>	<u>85</u>
<u>6</u>	BG	<u>26</u>	AgSom	<u>46</u>	Orhy	<u>66</u>	<u>86</u>
<u>7</u>	BG	<u>27</u>	Lit	<u>47</u>	BG	<u>67</u>	<u>87</u>
<u>8</u>	BG	<u>28</u>	Lit	<u>48</u>	BG	<u>68</u>	<u>88</u>
<u>9</u>	BG	<u>29</u>	Lit	<u>49</u>	Bolui	<u>69</u>	<u>89</u>
<u>10</u>	BG	<u>30</u>	BG	<u>50</u>	Lit	<u>70</u>	<u>90</u>
<u>11</u>	Lit	<u>31</u>	AgSom	<u>51</u>		<u>71</u>	<u>91</u>
<u>12</u>	BG	<u>32</u>	AgSom	<u>52</u>		<u>72</u>	<u>92</u>
<u>13</u>	Lit	<u>33</u>	AgSom	<u>53</u>		<u>73</u>	<u>93</u>
<u>14</u>	BG	<u>34</u>	BG	<u>54</u>		<u>74</u>	<u>94</u>
<u>15</u>	BG	<u>35</u>	AgSom	<u>55</u>		<u>75</u>	<u>95</u>
<u>16</u>	AgSom	<u>36</u>	Lit	<u>56</u>		<u>76</u>	<u>96</u>
<u>17</u>	AgSom	<u>37</u>	Orhy	<u>57</u>		<u>77</u>	<u>97</u>
<u>18</u>	BG	<u>38</u>	Orhy	<u>58</u>		<u>78</u>	<u>98</u>
<u>19</u>	BG	<u>39</u>	Orhy	<u>59</u>		<u>79</u>	<u>99</u>
<u>20</u>	BG	<u>40</u>	Orhy	<u>60</u>		<u>80</u>	<u>100</u>

Total Rock (R) %       
 Total Bare Ground (BG) %       
 Total Plant Cover % 30 Perennial      Annual       
 Total Litter (L) %



FROM : NRCS GRANTS FO

PHONE NO. : 505 287 7049

Aug. 14 2000 03:38PM P1

## RANGE SITE DESCRIPTION

## Section II E, Technical Guide

A. SITE NO. 036-113-N

Sandy (WP-2)

B. PHYSIOGRAPHIC FEATURES

This site usually occurs on level to gently sloping or undulating topography of upland plains. Slopes average less than 10 percent. Elevations range from about 6,000 feet to just over 7,200 feet.

C. CLIMATIC FEATURES

1. Average annual precipitation varies from about 10 inches to just over 16 inches. Fluctuations ranging from about 5 inches to 25 inches are not uncommon. The overall climate is characterized by cold dry winters in which winter moisture is less than summer. As much as half or more of the annual precipitation can be expected to come during the period of July through September. Thus, fall conditions are often more favorable for good growth of cool-season perennial grasses, shrubs, and forbs than are those of spring.

2. The average frost-free season is about 120 days and extends from approximately mid-May to early or mid-September. Average annual air temperatures are 50° F. or lower, and summer maximums rarely exceed 100° F. Winter minimums typically approach or go below zero. Monthly mean temperatures exceed 70° F. for the period of July and August.

3. Rainfall patterns generally favor warm-season perennial vegetation, while the temperature regime tends to favor cool-season vegetation. This creates a somewhat complex community of plants on a given range site which is quite susceptible to disturbance and is at or near its productive potential only when both the natural warm- and cool-season dominants are present.

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## D. SOILS

1. The soils of this site are moderately deep to deep, well drained, and may or may not be calcareous throughout. Typically, the surface layer is a sandy loam, fine sandy loam, or loamy fine sand at least 5 or 6 inches thick over sandy loam to clay loam subsoils. Permeability is moderately slow to moderately rapid, and the available water capacity is moderate to high.

The soils of this site are subject to soil blowing.

## 2. Characteristic soils are:

Telescope loamy fine sand

## 3. Other soils included are:

Royosa fine sand

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January 1980

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## E. POTENTIAL NATURAL PLANT COMMUNITY

1. This site is characterized by both warm- and cool-season grasses, scattered shrubs, half-shrubs, and forbs. Blue grama and western wheatgrass are co-dominants, with Indian ricegrass and dropseed closely associated. Principal shrubs and half-shrubs include fourwing saltbush, winterfat, and sand sagebrush. Rocky Mountain beeplant is often the most noticeable forb. Broom snakeweed is most common in certain wet years and when the plant community deteriorates from its potential.

2. Composition of Potential Plant Community

Approximate percentage of total annual herbage production.

Grasses and Grasslike - 75-85%		(Shrubs, half-shrubs, vines and trees)		Forbs - 5-10%	
Western wheatgrass	15-20	Woody - 10-15%		Perennials	3-8
Blue grama	25-30	Fourwing saltbush)	5-10	Annuals	1-5
Indian ricegrass	5-10	Winterfat )			
Needleandthread )		Bigelow sagebrush	1-5		
Bottlebrush squirreltail)	5-10	Broom snakeweed )			
New Mexico feathergrass )		Rabbitbrush )	1-3		
Sand dropseed )		Sand sagebrush )			
Spike dropseed )	10-15	Spineless horsebrush)			
Galleta	1-5				
Ring muhly )					
Sandhill muhly )	3-5				
False buffalograss )					
Threeawns spp. )	1-5				
Black grama	1-5				
Spike muhly	1-3				

3. Canopy Cover

Shrubs and half-shrubs - 5% @ 75% → 3.75%

4. Ground Cover (Average Percent of Surface Area)

Grasses, grasslike, forbs	18	@ 75% → 13.5%
Bare ground	69	
Surface gravel	1	
Surface cobble and stones	0	
Litter - percent of area	12	
av. depth in cm.	2	

## F. TOTAL ANNUAL HERBAGE PRODUCTION (Air-dry, lbs./ac.)

Favorable years - 850 (Average)

Unfavorable years - 325 (Average) 244 - 638 lbs/ac.

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January 1980

## G. SITE INTERPRETATIONS

1. Grazing

This site is suitable for grazing by most kinds and classes of livestock in all seasons of the year but is poorly suited for continuous year-long grazing if potential natural vegetation is to be maintained. Under such use, cool-season grasses, such as western wheatgrass, Indian ricegrass, and needleandthread, may decline or even disappear. If use is heavy and prolonged, many of the more palatable warm-season species will also decline. The site in a typically deteriorated condition may be characterized by low-vigor, sod-like blue grama and possibly some galleta. Further deterioration is characterized by increasing amounts of bare ground, increases in ring muhly, sandhill muhly, threeawns and rabbitbrush, and by certain annual forbs. Production in these instances may be cut to one-third or less of the potential, and soil blowing may become severe. The site, in certain instances, is subject to invasion by woody species such as pinyon pine and juniper.

2. Wood Products

This site has no significant value for wood products.

3. Habitat for Wildlife

This range site provides habitat which supports a resident animal community that is characterized by pronghorn antelope, kit fox, badger, desert cottontail, spotted ground squirrel, Ord's kangaroo rat, white-throated woodrat, Botta's pocket gopher, plains pocket mouse, Northern grasshopper mouse, ferruginous hawk, mourning dove, meadowlark, plains spadefoot toad, Eastern fence lizard, plateau whiptail, short-horned lizard and prairie rattlesnake.

Common raven and prairie falcon hunt over the site.

4. Hydrologic Interpretations

<u>Soil Series</u>	<u>Hydrologic Groups</u>
Telescope	B
Royosa fine sand	A

Runoff curve numbers are determined by field investigations using hydrologic cover conditions and hydrologic soil groups.

5. Recreation and Natural Beauty

This site offers fair potential for hiking, horseback riding, nature observation, photography, camping, and picnicking. It offers good to excellent potential for hunting of pronghorn antelope.

In years of favorable moisture, colorful wildflowers dot the landscape.

6. Endangered Plants and Animals

To be added as reliable information becomes available.

## H. OTHER PERTINENT INFORMATION

1. Guide to Suggested Initial Stocking Rate Acres per Animal Unit Month

<u>Range Condition</u>	<u>Ac/Aum</u>
Excellent (100-76)	3.6-4.7
Good (75-51)	4.5-7.0
Fair (50-26)	6.8-12.0
Poor (25-0)	12.0+

2. Relative Quality of Plants for Animal Use 1/

## (a) Cattle

<u>Primary</u>	<u>Secondary</u>	<u>Low Value</u>
Western wheatgrass	Blue grama	Broom snakeweed
Indian ricegrass	Galleta	Rabbitbrush
Needleandthread	Bigelow sagebrush	Spineless horsebrush
New Mexico feathergrass	Sand dropseed	Sandhill muhly
Winterfat	Threeawns spp.	Ring muhly
Fourwing saltbush	Most perennial forbs	False buffalograss
Black grama		
Bottlebrush squirreltail		

## (b) Antelope and Sheep

<u>Primary</u>	<u>Secondary</u>	<u>Low Value</u>
Winterfat	Blue grama	Broom snakeweed
Bigelow sagebrush	New Mexico feathergrass	Rabbitbrush
Western wheatgrass	Needleandthread	Sand sagebrush
Indian ricegrass	Threeawns spp.	Sandhill muhly
Fourwing saltbush	Dropseeds	Spineless horsebrush
Most perennial forbs		

FROM : NRCS GRANTS FO

PHONE NO. : 505 287 7049

Aug. 14 2000 03:40PM PG

I. IDENTIFICATION AND AUTHORIZATION

1. USDA SCS  
Albuquerque, NM  
MLRA 36
2. Field Offices:  
Reserve  
Magdalena/Quemado
3. Field Office Sample Location

4. Approved:

*D. J. Lester* *2/15/80*  
State Range Conservationist Date

*Durwood E. Ball* *3/27/80*  
WTSC Range Conservationist Date

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# Legend and Definitions for Range Site Descriptions.

- 1/ This rating system provides general guidance as to animal preference for plant species. It also indicates possible competition between kinds of animals for the various plants. Grazing preference changes from time to time and place to place, depending upon the animals, upon plant palatability and nutritive value, stage of growth and season of use, relative abundance, and associated plants. Grazing preference does not necessarily reflect a plant's ecological place in the climax plant community.

The following definitions apply to cattle, sheep, goats, deer, and antelope grazing:

Primary: These species generally decrease when the climax plant community is subjected to continuous heavy grazing pressure by the animals listed. These species are normally grazed first and preferred by the designated grazing animals when given free choice.

Secondary: These plants usually increase initially, then decrease when the site is subjected to continuous heavy grazing use by the animals listed. These plants are normally grazed after primary plants become scarce under free choice, or along with them under intensive grazing systems.

Low Value: These plants continue to increase with heavy, continuous grazing use of the site. These plants are not normally grazed until primary and secondary species are gone and animals are forced to eat them.

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